The Builder.

VOL. XXXVIII. No. 1929. SATURDAY, JANUARY 24, 1880.

ILLUSTRATIONS.

The Publishers and Printers' New Club-House, Paris.—M. Charles Garnier, Architect 98
Tettenhall, near Wolverhampton (Plan, 105).—Residence of Lieut.-Col. Thorneycroft 100
The Fireplace in the Great Music-Room, Tettenhall, near Wolverhampton 102, 103

CONTENTS.

A Notable House: Tettenhall, near Wolverhampton 97
Speech of the President of the Institution of Civil Engineers 99
Better Days for Railways 99
Cabul and Eastern Art and Doings 99
Royal Academy Lectures on Architecture, by Professor Edward M. Barry, R.A.: Second Lecture 101
Some New French Artistic Books 105
Honour to the Spade 106
From the Banks of the Seine 106
A Farewell to Gray's Inn-lane 106
The Publishers and Printers' Club-house, Paris 107
The Society of Arts' Experts on the Exhibition of 1878, and the Social Condition of Artisans 107
The Churches of Scull[illegible]ay: Architectural Association 109
Hints for the Authorities of the British Museum and National Gallery 109
Buddhist Architecture in the Julialabad Valley: Royal Institute of British Architects 111
Practical Hygienic Demonstrations 113
The Site for the Battersea Baths and Washhouses 113
Art Gallery for Birmingham 113
The Strikes of the Past Ten Years 114
The Unemployed of London 114
The Painters' Company 114
The Dublin Bricklayers 114
Proposed New Infirmary Buildings at Fulham 114
Proposed Conversion of the Old Lambeth Burial-ground 114
The Proposed Hospital for Infectious Diseases at Heyrel Hill, near Sittingbourne 115
City Church and Churchyard Protection Society 115
Gas-pipes and Rats 115
Improvements in Brighton and the Artisans' Dwellings Act 115
Tendering at Hammersmith 115
Boyle's System of Ventilating Gas-burners 115
Double Action Soil-pipe Ventilators 116
Stained Town-hall Competition 116
Saragossa Cathedral 116
Variorum 116
Miscellanea 116

A Notable House: Tettenhall, near Wolverhampton.

TETTENHALL, as now added to and arranged by its owner, Lieut.-Col. Thorneycroft, presents several points of considerable interest, and we are glad to be able to lay before our readers an account of it by its deviser. We give a view of the house externally, a view of the interior of the large music-room, and a plan of the ground floor, and shall allow the owner to tell his story in his own words:—

Fresh Air and How to get It: Prevention better than Cure.

For the benefit of others, I shall feel obliged if you will give publicity to my past and present views upon ventilation and sewerage, many of which ideas I have been enabled to carry out with much advantage at my own house, and I am most anxious for others to enjoy the same benefits. There are also a few remarks on health, which, I hope, may interest many. The views and plan which you are good enough to publish will make my description clear. I hope you will also publish the report of the sanitary engineer belonging to the Birmingham Sanitary Supply Association.

In August, 1866, I wrote an article on the subject of fresh air, but failed to get it published. It was addressed especially to those who live in crowded cities, where fresh air is scarce, and sewer gas plentiful. Now that this subject has become more discussed, I once again write the same views upon it, and I shall have the additional advantage of being able to illustrate some of the remedies I then proposed, which I have since tested in my own house, with so much advantage that I am anxious for others to enjoy the same benefits. The mode of ventilation and sewerage I proposed in 1866 I now again propose, together with some further improvements. The sewer gas in some of the London streets, as well as in most other cities and large towns, is very full of poison, and I then recommended, as I now do, to have many pipes put from the sewers up the inside of the gas-lamps, and to bring the sewer gas close to the flame, so that it might be consumed; these lamps to burn day and night. In addition to this, I would erect in some parts of the streets cast-iron square pipes up the sides of some of the houses, to above the tops of them, and about 8 ft. from the ground put a lamp with a burner that burns air as well as gas, on Bunsen's plan; and in addition to this put a wire gauze above the gaslight, so that it heats it to such a point that as the poisoned gas goes through the wire it must be burnt. I carry out this plan at my house. This plan should be used in regular gas-lamps also, and so you will consume the sewer gas. But now that Archimedean screw ventilators are invented, put one of these on the top of the cast-iron pipe on the top of the house: it sucks up the bad sewer-gas so much more quickly than the open pipe would. I have one of these pipes lighted up day and night, which I have shown to my fellow directors of the Wolverhampton and South Staffordshire hospital; it is carried up to the top of the cascade tower, and has the Archimedean screw ventilator at the top. It lights up the drive as visitors approach the front door; but in addition to this, to prevent the possibility of any sewer-gas getting into my house, I have all the baths, sinks, and closets well trapped, and ventilating-pipes taken from them up above the roof of the house, and an Archimedean screw ventilator put on the top of the pipes. What I here recommend I have adopted with success; if with large sewers the gas-burner with the Archimedean screw is not strong enough to exhaust the sewer-gas, then one of Verity's fans, or some other strong means of forcing or drawing air, may be adopted. It is a safe plan also to let fresh air freely into sewers: it helps to destroy the sewer-gas.

As regards ventilation to all churches, opera-houses, theatres, concert-halls, eating-houses, refreshment-rooms, kitchens, smoke-rooms, closets, and other places that require fresh air, should the room be small, Tobin's tubes and the Archimedean screw will answer; but for all large buildings my present plan is the best. It is the same that I recommended in 1866, viz., the use of large fans to force fresh air all about the building, on the same plan as gas is forced through small pipes. This is to get the fresh air into the building; then the plan to get the used-up air out of it is to have a sun gas-light at the top of the room. Put a pipe above it that goes down from the top of the building to the same part where the other fan works, and this will drain all the bad air out of the building; then the two fans can be worked by the same power, viz., a small steam-engine, a gas and air engine, water-power, Verity's patent fan, or a water-motor, or you could employ one or two cart-horses to walk on a sort of treadmill or wheel and turn it round so as to work the two fans. The size of the building will guide you. When there is no wind, the Archimedean screw and the Boyle's air-pump ventilators are of little use, as they cannot act much. The town-hall at Birmingham last musical festival felt comfortable when you first entered into it, in the morning; but it gradually became worse and worse, and wanted a good steam-engine at work to supply properly fresh air before the performance was half over. The windows in the town-hall could be altered to the same plan as Tobin's ventilators. I use Boyle's air-pump ventilators and the Archimedean screw, and when there is plenty of wind both are good; but I think the screw the most powerful. Now, if we can only get my plan adopted of forcing fresh air into a building, as gas is forced into a house, how delightful it would be in the summer time to turn on the fresh-air tap in your opera-box, in a smoke-room, or into a small London ball-room, much over-crowded, where people are panting for fresh air. Water and gas are forced into buildings; they would go in without force; how much more do we require fresh air, and how easy it is to get it. The air should be let into rooms, large or small, in pipes pointing towards the ceiling. Tobin's ventilators are first-rate; use them, and you will not feel the draught or cold, and the hot air being taken from the top of the rooms through a gas sunlight-burner would be destroyed before it got to the open air, and could do no damage; but where Tobin's ventilators are not enough for the occasion, then Verity's fan or some stronger measure has to be used. The air in the winter can be forced through a heated chamber to make the room warm as well as ventilate it; you may ventilate with warm air as well as cold,—I have this plan in operation at my house.

In 1866 I proposed to form a Fresh-Air Joint-Stock Company the same as a gas company; it could get fresh air for London, say from Brighton, in the same manner as water is now sent long distances, only the iron pipes must be larger. All houses and buildings could have fresh-air meters the same as a gas-meter, and pay for what they use, or the fresh air could be taken for large towns from the nearest green-fields, or from the highest towers on the top of the highest hill in the towns. So much for ventilation and sewerage; and I now take this opportunity to say that should any architect, engineer, or proprietor who is building, or wants to adapt these new plans, like to see the experiments I have made here at my own house, if he will write to me, so that I may fix a suitable time for him, he can come and judge for himself; for my only object in making this communication is, that I wish it to be the same benefit to society at large as it is to me; and I want to see London and other large places with air almost as pure as the country, and smoke as scarce. I further recommend in towns all kitchens to be at the top of the house, with a little rope-lift to take the things up and down. This does away with the dreadful smell of cooking, and boiled-cabbage water, which generally meets your entrance into most houses about dinner-time, where kitchens are below. The entrance-hall and staircase form a ventilating-flue, through which all the bad smells attack you. The use of Brown, Brothers, & Co.'s, patent coal or coke smoke-burning stove is good; or, what is better still, use the gas cooking-stoves they make. Their shop is 470, Oxford-street, London. I have invented a hot-air and hot-water ventilating stove-grate to burn either gas or coals; it gives a very good heat, and is suitable for any large rooms. I have two now in use to be seen here. Let the reader now look at the view of the house as it stands, and also the old-fashioned chimneypiece, and I will endeavour, as briefly as I can, to point out the

various objects of interest in the house. There are Tobin's ventilators and Archimedean screw ventilators, with Boyle's patent air-pump ventilators all about the house, wherever fresh air is required, and there is one large music-room here which I will describe more fully. How I came to build this room I will explain.

We wanted badly in this village of Tettenhall, a large room to hold a concert, penny-readings, theatricals, lectures, and public meetings in. We held several meetings in the village to try and build one together, but we never could get it done. About that time I was making considerable alterations at my house, and additions, as my family was large, and we were short of rooms, particularly bed-rooms. Seeing we failed conjointly to carry out any plan for building this assembly-room, I said I would build one in my own house; I could then arrange it after my own plan, and it would also be useful for various good purposes. I have had a temporary stage erected on trestles at one end of the room, which makes it into a little theatre, capable of holding 400 comfortably, and when this stage is removed partially it will hold for a concert 600. I have had in it theatricals, lectures, concerts, and a bazaar for the benefit of the distressed poor, the hospital, and other deserving objects. Of course, acting for money, I was obliged to take out a regular theatrical licence, so that I am in a position to let this music-room or theatre to any one I please, at a moderate rent; and sometimes it is for the use of the Tettenhall volunteers. I have built it for public purposes, as well as private use, and I think a full description of it will interest many who may never have the opportunity of seeing it. There are two separate entrances for the public from the coach drive, apart from the other portions of the house. The room is about 90 ft. long by 60 ft. wide, with a small gallery round it, and then another larger gallery over that, with bed-rooms in it, the height of the room where there are no bed-rooms above is from 40 ft. to 50 ft.; it varies in places. The floor is on india-rubber springs, and iron rollers, like the Manchester ball-room; it springs well, and is first-rate to dance upon. There are fifteen Tobin's ventilators, to bring fresh air into the room at an average of about 800 cubic feet per minute; there is also a Verity's patent fan that brings in about 200 cubic feet of fresh air per minute, as well as a water-motor with a fan that brings in about 100 cubic feet of fresh air per minute; also a small steam-engine, with little fan, can send in 100 cubic feet of fresh air per minute; therefore you can get a total quantity of fresh air sent in, say about 1,200 cubic feet of fresh air per minute, without a draught, and there are four large Archimedean screw ventilators in the roof, arranged to send out the bad heated air after it has been used.

The Verity's patent fan can send the cold air in direct, or it can send the air through the heating-apparatus hot, or through a small heating-chamber in the gas-stove in the lower billiard-room, hot, or cold if you turn the gas off. The water-motor fan can send the air in cold to the room, or send it through a pipe to blow up the large wood fire in the old-fashioned fireplace, or it can be utilised to force the air up a large shaft through an Archimedean screw ventilator from the dinner-service room, where the hot meat is being carved at dinner on a gas-stove to keep it warm, on the American plan, so that the smell and steam from the meat go away up the large wooden shaft through the top of the house.

There are two billiard-rooms opening into the music-room, a Roman or Turkish bath, a conservatory, a dinner-service room with gas plate-warmer, and American dinner-heating or cooking range, a lift to upper rooms, two cascades, one falling 45 ft., and a sort of small running brook; and when the stage, which is fixed on trestles, is removed, you can play at lawn-tennis, badminton, skate with rink skates bound with indiarubber tires, and use the indiarubber bicycle. The floor under the side gallery is raised a little to keep free of the dancers: it is a good room to sing in,—no curtains are used, only wooden patent blinds. A good heating-apparatus, constructed by myself, heats the room comfortably, and the two small tube boilers I put at the top of the fire in this apparatus keep the conservatory warm, and we get plenty of hot water for the baths in the new part of the house. There is a fine old-fashioned oak chimney-piece in the chimney corner, which is about 16 ft. by 8 ft., and makes a good little smoke-room. There is a museum in the gallery, old oak and stags' heads, with old armour around the room. A telephone goes from near the fireplace to close to the butler's pantry, and two others from that point to the stable and racquet-court, besides another from my bed-room to the coachman's bed-room next the stable, where he has a means of communicating with the police-station about 200 yards distant; so that, in case of fire or burglars, I could let the police know that they were wanted in a minute's time, and in four minutes' time after they knew they were required they could be at this house. One of my newly-invented hot-air and hot-water ventilating stove-grates works well in the upper billiard-room. A large magic lantern, with the limelight, is erected in the gallery ready any minute for use, and about 35 ft. from it is a large sheet on rollers, 35 ft. by 22 ft., like that at the Polytechnic. On this sheet I lately showed my fellow directors from the Wolverhampton Hospital several views of the danger of sewers leaking, and the dreadful effects of it. All lead and iron pipes from closets, baths, and sinks should be got outside the house as quickly as possible, and not run under the house at all; neither should the sewage pipes, into which the lead or iron pipes run, as the least leakage saturates the foundations and produces fever. I hope many lectures will shortly be given on this very important subject. There are six water-pipes always ready with a great pressure from the water-works to put out a fire, as well as two of the patent fire-extincteurs. The lower and upper billiard-rooms open into each other, the floor under the top table being removed; and in the lower billiard-room is a patent gas hygienic stove, with a heating-chamber at the back of it, and through this heating-chamber I can force 200 cubic feet of warm air into the two billiard-rooms in a minute, or put out the gas and make it cold air, if you want it so. Should the regular hot-air apparatus that heats the billiard-rooms get out of order, then the two gas-stoves would do it. At the back of the stage are three plate-glass windows that look into the pleasure-grounds, and when certain illuminated coloured lights are lighted it makes the stage look about 200 ft. long, and produces such an effect as I never saw before. This effect is still increased when the cascade or fountain is worked at the same time. There is a telegraph in the old dining-room, next the conservatory, which goes to a smoke-room about 35 ft. up the large tower. There is also a flashing apparatus on the top of this large tower, like the one used in Zululand, kindly fitted up by Mr. Viles, of Pendryll Hall, Codsall Wood, near Wolverhampton.

In my dressing-room I have arranged a coil of hot-water pipes that supply the bath, so that you can warm clothes, linen, or boots; the same pipe is also brought through my boot-rack cupboard, and keeps the boots and shoes from getting mouldy or damp. I have also invented a neck shower-bath, that showers straight at the throat, and covers the shoulders. It does not wet the head. It is most admirable for all whose throats are not strong, or who sing much. You should stand with your feet in about 1-in. of warm water when you receive the shock. My wife, all my family, and myself, have used this sort of bath for many years with advantage. We have six in the house, and four more in the swimming-bath in the racquet-court. There is also a douche-bath and a small douche-bath arranged to apply to the liver, should it be sluggish and inactive. A little application of it when required does much good. There is a Verity's patent gas-fire in my dressing-room, which looks bright and feels warm in three minutes after being lighted. Close to it are two Tobin's ventilators, and an Archimedean-screw ventilator in the bath-room close by. I have an excellent silent doctor near, in the shape of a weighing-machine, and any one who, like myself, is inclined to get stout should do as I do,—weigh immediately after my bath every morning,—and if I find myself the least bit above the weight I think and feel I should be to be active and healthy, I eat and drink less, until I come back to the proper weight again. Others will find this to be an excellent plan; but, besides eating and drinking less, I play racquets, lawn tennis, or take perspiring exercise daily in some way, and occasionally take a Roman or Turkish bath. This subject brings me to a few more remarks about health, without which no one can enjoy life. To feel healthy you must feel warm, with the blood well circulating. Wear flannel or some warm woollen or silk substance next the skin. This cold changeable climate requires it. Some time back I read of an old man who lived until he was 120, I think; his name was Jenkins. He said his mother wrapped him up in flannel the day he was born, and both day and night until he died he wore flannel next his skin, which kept him always so warm and strong that whooping-cough, measles, chicken-pox, and such-like children's complaints, could not get at him: so stick to flannel, and take daily a little perspiring exercise to open the pores of the skin. It is best taken just before dinner, when you can agreeably change all your clothes. Take a tepid sponge-bath, and put on warm dry clothes. Flesh-brushes are first-rate things to use every morning before your bath, it brings about a nice circulation. Above all things, always change shoes and socks when damp.

I have endeavoured to ventilate the racquet-court (which is covered in) and also the stables, after the same plan as the house. I am trying to bottle air, so that the quality can be tested from any part where it is thought to be of a dangerous and bad quality. I propose to have strong glass bottles made, with force screw corks and a tap in the cork; then, with air-pump pressure it can be quite emptied, and a good vacuum formed, except a little sensitive paper, so that should there be poison in the air it will show itself on the paper. On this point my experiments are not yet completed, and I invite all who are interested in this subject to point out the best plan to carry it out, and shall feel obliged if they will write to me about it.

I strongly recommend all to have their houses properly examined by a sanitary engineer, who should have the water, hard and soft, analysed, and also any green paper on the walls. I discovered in London, in one of the large bed-rooms in Grosvenor-place, the poison in the paper, which was dangerous, and smelt bad. It was removed, and all was made sweet and wholesome. And where danger in sewage or ventilation or water is discovered, have it at once remedied. The inspection can be had for 1*l.* per annum, and see the good that must result from it. Fevers will be lessened and hospitals less crowded. I am sure I am much indebted to the careful and able way in which Mr. T. Kennington has inspected and corrected many failings I had here; the work has been well done, and at a moderate cost, to my entire satisfaction, and I hope, Mr. Editor, you will please to publish his report. Let me say in finishing what I said at the beginning, "Prevention is better than Cure."

THOMAS THORNEYCROFT.

The following is the report mentioned, and although in printing it some little repetition occurs, its suggestiveness and the importance of the questions involved afford more than sufficient excuse:—

A few months ago Lieut.-Col. Thorneycroft called at our establishment in Birmingham, to see the various new traps and pipes connected with sewage, as he was making some alteration with his sewerage and ventilation. I informed him that the Association, for a yearly payment of 1*l.*, would send over a qualified engineer or architect, to inspect the condition of any house and premises, and give a full written report upon them as regards its healthy state, relative to ventilation and drainage. He replied that he was then investigating a leakage in one of the sewer-drains, and he should be glad if I would come over and inspect, not only that fault, but all the drainage and ventilation in the house and premises. I did so. The broken sewage-pipe was soon discovered. Several cart-loads of saturated earth were removed from the foundation of the house, where this leakage had taken place; fresh lime riddlings replaced it; new 9 in. glazed pipes were put in (with a better fall) and well cemented together, and it was discovered that, some time previously, when one of Mr. G. Jennings's new patent closets was put in, to replace an old-fashioned one, a brick must have fallen down the large pipe about 3 ft., which cracked the sewer-pipe; this brick also stopped the solid matter going along the sewer, and the result was dangerous. This investigation was going on when I first inspected the premises. I also found that although the closets were ventilated with an air-pipe out on to the roof, the air-pipes were not large enough, and there were no Archimedean screw ventilators at the top of them to draw up more surely the sewer gas; these deficiencies I quickly remedied, introducing all over the house where it was required Tobin's ventilators to let in the fresh

air, and the Archimedean screw ventilators with pipes connected to them through the ceilings to draw out the sewer gas or any air of bad quality. Probably there is not a residence in the Midland counties where so much attention has been paid to sanitary requirements and ventilation as at Lieut.-Colonel Thorneycroft's, Tettenhall Wood, near Wolverhampton. It is situated on the ridge of a hill, on the red sandstone rock, with a good fall from it.

A Royal Commission was opened in Dublin, September 19th, 1879, to inquire into the causes of the high death-rate in the city and its general sanitary state. The commissioners were Mr. Robt. Rawlinson, C.B., and Mr. Francis Xavier Maccabe, Local Government inspector. Mr. Rawlinson, in the course of his inquiry, said he had no hesitation in declaring that there was not a single residence in Dublin or its vicinity, or a single nobleman's residence in Ireland (if its drains had not been scientifically dealt with within the last six years), that was not in a dangerously unwholesome condition. The same was the case in London. It is not two years since Marlborough House, the residence of the Prince of Wales, was inspected, and it had cost upwards of 6,000*l.* to remove cesspools and drains from beneath the basement. Six months ago, Spencer House, in St. James's Park, the residence of Earl Spencer, was inspected, and the basement was found to be one mass of corrupt cesspool matter. It has all been remedied, and the place properly drained, at a cost of nearly 5,000*l.* Lord Verulam's house, near St. Alban's, was examined twelve months ago, and re-sewered at a cost of 3,000*l.* The question every person should consider is, whether wealth is of more value than health and comfort. Lieut.-Colonel Thorneycroft has well considered this subject, and a brief description of his system of drainage may be interesting to many of your readers. At his house he has a separate system of sewerage, unconnected with any other property. The main sewer flows into an uncovered tank, about 300 yards from the house. Here the solid matter is allowed to fall to the bottom and settle in the tank; the liquid part passes along a pipe into a long, open, square trough, comprising five open boxes close together. In the first compartment is open wire-work; the second division has the wire-work closer; the third closer still; and so on until the fifth, which has a fine copper-wire gauze so that nothing solid can get through it, and thus the water passes away in a clear effluent stream. These various tanks and boxes are cleaned out every morning, and the solid deposit put by for the field. But no system of drainage connected with sewage can be perfect until the water is filtered through the land or in some other way. There is also a fresh-water drain kept distinct, which runs into a pool, and thence into the sewage-drain, and so helps to dilute the liquid sewage. There are a variety of shafts for inspection, and ventilation-holes into the drains; and near the house, against the square tower where the cascade falls, is a 6-in. pipe taken up from the sewage-drain 10 ft.; then along the ground about 20 ft.; then up an iron pipe outside against the tower. About 5 ft. from the ground there is a lamp in the iron pipe, with a gas-burner on the Bunsen principle; thus, as the poisonous sewer gas passes through, it becomes partially destroyed; a few inches above this burner is placed a gauze wire, which gets so hot that it must consume most of the sewer-gas in passing up to the top of the pipe into the air. There is an Archimedean screw ventilator at the top of this pipe, about 40 ft. high, to create a stronger current; but to prevent the possibility of sewer-gas forming beyond this point, between this flame lamp-shaft and the other part of the house-sewers there are several pipes up to the top of the roof, and one pipe to the top of the highest tower, perhaps 70 ft. high; each pipe has an Archimedean screw ventilator on it to pull all the foul air out of the sewer. Again, in addition to these precautions, a long wire is attached to a valve in a large cistern at the top of the old part of the house, the handle of which wire comes down close to the library door: so, if it is pulled, all the sewage-pipes are flushed in a minute with a stream of water. All the closets, sinks, baths, and cisterns are trapped, and ventilating pipes are put from them through the roof, with the Archimedean screw-ventilators on the top of them. In matters of heating and ventilating equal provision has been made; the large music-room is ventilated with fifteen Tobin's ventilators, which will let in about 800 cubic feet of fresh air in a minute, one of Verity's patent fans, which would admit 200 cubic feet of fresh air per minute, and one patent water-motor fan that would send in about 100 cubic feet of air in a minute; a small steam-engine with fan will send in 100 cubic feet also: thus collectively you would get about 1,200 cubic feet of fresh air admitted into this room in a minute; by this means the air of the room is entirely changed every two hours.

The air from the water-motor fan can also be directed to play upon a large wood fire in the old-fashioned fifteenth-century chimney fire-grate. Of course, this helps greatly to extract air out of the room, in this large, tall chimney; then there are four large Archimedean screw ventilators put in the roof that can pull out the heated and used air very freely, the Kew experiments notwithstanding, so that if by chance any gas-burner were left turned on after the gas was turned off at the meter, there would not be one half the danger of an explosion of gas when again turned on at the meter, should a lighted candle be taken into the room.

The dining-room, as well as the kitchen, has Tobin's ventilators and the Archimedean screw. Part of the kitchen is 20 feet high, and the heat from the gas cooking-stove and also the coal cooking-stove will keep the two Archimedean screw ventilators going round when nearly all the others are standing still for want of fresh air. The stables, out-houses, racquet-court, swimming-bath, and Turkish baths are as thoroughly ventilated and on the same plan as the house.

THOMAS KENNINGTON,
Sanitary Engineer to the Birmingham Sanitary Supply Association.
Colemore-row, Birmingham.

As to the illustrations, we need only add that the chimney-piece of the great music-room is formed of old carved oak; the subject of the centre picture is "Queen Esther supplicating the King on behalf of the Jews"; that of a smaller one is the "Sacrifice of Isaac," and on the other side is the "Ascension of our Saviour." The opening is about 6 ft. high, and the two seats within will accommodate six people, but another six can sit within this chimney-corner, the space being 16 ft. by 8 ft. The plan is fully explained by the references attached.

THE SPEECH OF THE PRESIDENT OF THE INSTITUTION OF CIVIL ENGINEERS.

TEN, twenty, a hundred, or even a larger number of persons will fasten eagerly on some political announcement, to one whose attention will be riveted by a scientific discovery. And of all political announcements, those which are usually looked for with most interest,—and, we may add, read with most dissatisfaction,—are usually those sibilline leaves in which kings, presidents, or ministers address a select audience on the annual assembling of their parliaments or great councils. Let the abstracts of the journals say "Address of the President," and purchasers will be ready with their pence. But if they find that, in the journal which they have eagerly bought, the same title runs on, "of the Institute of British Architects," or "of the Institution of Civil Engineers," how many will throw the paper aside with an impatient, or even an improper, word.

And yet, if we compare the real interest of what is in point of fact the carefully-guarded programme of the line of conduct that will be attempted for a few months by a political party, with that of an abstract of the progress of science or of art for a period of one or two years, or for a longer time, can we doubt which, in many cases, bears the closest relation to the welfare of mankind? From the point of view of the philosophic historian there cannot be a moment of hesitation.

In the address given to the Institution of Civil Engineers, by the new president, on the 13th current, Mr. Barlow's recollections point to the time when he commenced professional life, in 1828. In that year, on January 3rd, we may add, the Institution first received a charter of incorporation under the Great Seal. The veteran Telford was the first president. He retained the chair till his death, in 1834. He was succeeded by James Walker, who held the dignity till 1845. At that time it became the opinion of the Institution that a rotation in the office of president was desirable. Sir John Rennie, the third president, held the chair from 1845 until 1848; and Mr. W. H. Barlow, who has a hereditary claim on the respect of those connected with structural industry, is the twentieth president.

The inaugural address of the President of the Institution of Civil Engineers provokes a comparison which may well instigate the holder of that dignity to an unusul effort in framing his observations. The post has been filled by,—with the one lamented exception of Mr. Brunel,—most of the men who have given lustre to the profession. The address of Sir John Rennie was in fact a brief history of the engineering of Great Britain down to 1845. Mr. Robert Stephenson's singularly modest *resumé* of the progress to which his father and himself had so much contributed, was another memorable and most valuable paper. Mr. Fowler did much to keep up the tradition of scientific review. Mr. Bidder's address was only exceeded in its interest, looking at it rather from an educational than from an engineering point of view, by the paper which he read on another occasion, at the urgent instance of Mr. Robert Stephenson, on mental processes in arithmetic. We cannot recall any single effort of mental analysis of the kind that possesses so much significance and value since the date of Aristotle himself. And the very point of it is that it is the unveiling, by a self-taught man, of the process of self-teaching in the one study in which he attained unrivalled eminence.

Mr. Barlow's position as a member of the Commission of Inquiry on the Tay Bridge catastrophe (as to the causes for which the papers say that his advice was sought at an early period) made it unfit that he should do more than refer cursorily to the event. But the Institution will have to reckon with the very keen criticism of the engineers of Germany on this subject; nor will it be held to have discharged its duty to the country unless,—when the proper time arrives,—it inaugurates an exhaustive discussion of the facts. Nor is the Corps of Royal Engineers less involved in the great questions of which we have ventured to hint the existence. It is always easy to predict after an event has happened. It may prove that the German engineers are prophets of this sort. But what they state is, according to the *Cologne Gazette*, that they have always regarded the bridge with suspicion; that no German engineer would have ventured to erect such a structure; and, above all, that no German Governmental inspectors would have allowed such a bridge to be opened.

On this very important subject, referring to our remarks as to hastily rushing into print, it is desirable to place on record the fact that a pressure of 63 lb. per square foot has been recorded at the Bidston Observatory on January 30th, 1877, and a pressure of 64 lb. on the 23rd of November in the same year. One writer, who offered the public a not very intelligible algebraical statement as to the pressure on the Tay Bridge, cites the highest pressure registered at Bidston as 31·2 lb., and endeavours to throw doubt on the occurrence of higher pressure; citing a determination of 31·2 lb. as that due to a hurricane. This very misleading statement has called forth information from the director of the observatory in question to the effect that a pressure of 70 lb. was registered there in 1875, and one of 90 lb. in 1871. A more detailed list of the highest pressures in the years 1875-9, is communicated by a writer who dates from Birkenhead, under the signature of "W. H. L. M.," which shows the very important fact that the measured velocity of the wind by no means indicates the highest pressure of a storm. This is the case for the very simple reason that the anemometers only indicate the average velocity per hour, while the pressure-gauge shows the maximum pressure of the hardest gust. Thus, while a wind registered at 80 miles per hour only gave a maximum pressure of 51 lb. on the 22nd of November, 1877, a wind of the same speed per hour gave a maximum pressure of 64 lb. on the following day. On the 27th of December, 1878, when a pressure of 80 lb. per square foot was registered at Bidston, the velocity of the wind, during three consecutive hours, averaged 82 miles, 87 miles, and 92 miles per hour. If a velocity of 90 miles per hour gives a pressure of 80 lb., a velocity of 100 miles an hour, which is usually given as that of a tornado, will give a pressure of 100 lb., per square foot. We have thus reason for the opinion that the stability of no building can be considered as perfect, even in the United Kingdom, that has not a resistance of that amount. It has been urged that the highest pressures are only local. But the very gist of the matter is that they *are* local.

The subject demands attention all the more imperatively, because Mr. Barlow tells us of a design for a bridge over the Firth of Forth, with two spans of 1,600 ft. each. The writer we have just cited repeats the statement that Mr. Barlow and Dr. Pole have taken a mean pressure of 10 lb. per foot as a basis of calculation for the Forth Bridge. It is not apparent what "mean" pressure means in this case; but if it be,—as this writer would have it,—half the maximum pressure provided for, the allowance for the stability of the Forth Bridge is just one-fifth of that which every official inspector should now demand. Whether these reports and calculations of stability are rightly cited or not we cannot, of course, say: but as to the question of pressure there is less doubt. Eighty pounds per foot, Mr. Hartnup says, have been measured as the pressure of a great storm at Bidston. Perfect stability cannot, if that be so, be assured under a resisting power of 100 lb. per square foot. That is the result of a very simple rule-of-three sum.

Great interest attaches to the subject referred to by the president at the close of his address, as to "the many theories that obtained in the early days of the Institution, when a very general assumption was made of an antagonism between theory and practice. A more apt illustration of this view could not be found than is offered by the newspaper controversy about pressure of the wind; and the lesson which it imparts is, that we must be never satisfied until we have put to nature every question that the nature of the case admits. Thus, when the practical man (and Smeaton was eminently practical) first measured pressure and velocity, he constructed a table of the relations of the two. The man of mere theory takes Smeaton's table, puts up a contrivance for measuring the velocity of the wind, and calmly says,—"That is the maximum pressure." But then comes the man who seeks to probe the matter to the bottom. He puts up, not only an instrument to measure speed, but another to measure pressure. He is confounded on observing that the two instruments give wholly discrepant results. It is by such precious discrepancies that we are recalled to the consideration that a wind, sweeping at a measured average rate, may have beats of a much higher velocity, only the mean between which and the speed in the lull is shown by the wind gauge. Thus, then, practice comes in a second time to supplement a theory which was true in principle, but not thoroughly wrought out. And thus, from this great disaster, will the engineers and architects of England learn how to make due allowance for the possible fury of the storm. We wish that the builders of certain chimneys that we have lately observed springing up not very far from Kensington, would take the trouble of having calculations made as to their stability against a pressure of 30 or 40 lb. per square foot.

It is only fair to our readers to add that a great deal of wild writing, even by professional men, as to the pressure of the wind, might have been prevented by carefully reading the paper on the heat emitted from the human body regarded as an element in ventilation, printed in our volume for 1879. At p. 820 will be found statements, both of Smeaton's theory, and of the pressures registered at Glasgow, and determined as possible by the Astronomer Royal, which fit very closely with the records now published from Bidston.

BETTER DAYS FOR RAILWAYS.

IF 1879 closed with a great railway catastrophe, the first fortnight of 1880 has brought with it news of a stirring and encouraging kind for the proprietors of railways. The Brighton Railway Company has announced a dividend at the rate of 9 per cent. for the half year, against 8½ per cent. for the corresponding portion of 1878, carrying over, moreover, 20,000*l.* instead of 6,000*l.* The Metropolitan Railway has earned a gross income of 270,581*l.*, by a working expenditure of 95,189*l.*, thus keeping down the latter to about 35 per cent. of the former. We beg to recall to the memory of our readers our article on the relation between wages and dividends, and on the economies effected by the principal railway companies, on pages 1,096 and 1,201 of our volume for last year. The remark that "the lines which derive their chief income from passengers have a marvellous elasticity on an increasing traffic, which disappears almost entirely when the volume of the traffic is declining," could not be more forcibly illustrated than by the comparison of two successive half-years on this line. On increasing traffic, it will be remembered how high a position was then taken up by the Metropolitan, and still more by the Metropolitan District, lines. The former line, the chairman stated at the half-yearly meeting on the 14th inst., carried in the past half-year 34,000,000 passengers without an accident. The total number carried by it in 1878, according to the the Blue Book of "Railway Returns," was 52,639,848. That in the previous year, 1877, was 51,980,710, exclusive of season tickets. Half the year is not the same as a half-year; but, at any rate, there is evidence of an enormous increase of traffic on this line. It is all the more satisfactory to receive assurances of a cautious policy on the part of the Board. A proposed extension to Watford is laid on the shelf; and a due degree of prudent consideration is given to the very important question of the Inner Circle. No doubt the completion of direct railway communication from the Mansion House to Aldgate Station is a matter of great importance to the public. But the payment of from 660*l.* to 800*l.* per yard lineal for the right of running over some 500 or 600 yards of rail is one that is probably hitherto without precedent, and which demands very careful consideration.

We must not forget that the prosperity of the Brighton Railway has not been shared by the South-Eastern, which has announced a dividend at the rate of 7½ per cent., against 8 per cent. a year ago. The dividend on the ordinary stock, however, is but an imperfect indication of the net earnings of a line. The ordinary capital of the Brighton is 6,810,000*l.*, while that of the South-Eastern is 8,212,329*l.* The gross receipts of the two lines in 1878 were 2,042,050*l.* for the Brighton, and 2,030,402*l.* for the South-Eastern; the respective mileages being 349 and 334 miles. The gross capitals of the two lines would be within 100,000*l.* of the same figure, but for the fact that the subscriptions to other lines by the Brighton are about 2,500,000*l.* more than that of its neighbour.

Under these circumstances, it is very significant to find that on the South-Eastern line there is a falling off of 40,105*l.* on gross receipts, and on the Brighton an increase of 10,699*l.* in gross receipts. Does not this intimate a transfer of a certain amount of traffic from one line to another? Again, we find a decrease in the working expenditure of the South-Eastern of only 22,127*l.*, compared with a decrease in that of the Brighton of 36,325*l.* Some explanation of these figures may perhaps be given at the meetings. It looks as if the one line were using exertions that are more costly than successful to retain a traffic that is perhaps in part drifting to another. The comparison suggests how advantageous it would be, both to the, to some extent rival, lines, and to the public, for a syndicate to be arranged to make mutual arrangements for the timing of trains, and for the avoidance of any really competitive expenditure.

It will be observed with satisfaction, by those who feel that railway servants are by no means overpaid, that the saving effected in expenditure is chiefly in the price of fuel and materials, not in the item of wages.

CABUL AND EASTERN ART AND DOINGS.

IT might be difficult, perhaps, to find a time when what is emphatically termed the "East" was, or could be, of more interest to "Northmen" than it now is. Momentous events are, as all know, now day by day happening there which can scarcely be surpassed in interest and importance. Countries are being entered and marched through and across, and cities are being taken of which the very names are hardly to be found in our school geographies,—so strange and outlandish are they. Of the languages spoken by the inhabitants of some of those places, it need hardly be said none but a select and learned few have any notion, and hardly more is known of those who speak them. It is all but a new world which is opening out to the Northern,—and,—to use the ordinary conventional phrase,—civilised man. Nay, in the very effort to get at a little insight into this curious, and so out-of-the-way state of things, it becomes at times not a little puzzling to recognise the very same thing a second time from divers ways of naming and spelling the same word. The East, in short, is a strange medley, and we are but just beginning to get a glimpse of it. It must be of interest, then, to see a little of that portion of the East, if no more of it, which we are at the moment occupied with, and especially interested in, and now in part possession of.

Afghanistan and its capital, Cabul, would seem to include in them all that we can think of as characteristic of the East, and to afford fair specimens of the men of the East, and their special ways of work and life in this world. The very name—strange to say—is Persian, and, though known to the Afghans themselves, is not used by them. It is of interest to note that it has many dependencies, and includes among them the ancient Bactria, so that its history is of the past as well as the present. It is well worth a little looking into, out of the glare of the ordinary routine, both artistically and in all other ways, and that not even as an example of the East generally, but individuality; for it is often said, that as all Eastern countries are alike,—when one has been seen, all have been; but this most certainly must be a hasty mistake. We must needs confine ourselves to matters artistic, a sufficiently wide field, but would note in passing, that such a place must, indeed, be a strange one, when we are told by one of the British Embassy in 1809, that they, while travelling over the plains of it with the heat at 113°, saw ever before them the heights of the Hindoo Koosh range of bare rock, always covered with snow! Surely the men and the art of such a country must be widely diverse from ours, and what is done in such a place must needs be more or less exceptional and national, and unlike all that we see and experience about us,—almost a new world.

But to leave the mountains and rivers and other strange things of nature's moulding, let us glance at the art and architecture and artificial objects to be found in this far-distant Eastern country. The capital city, Cabul, where we are now putting matters in order, or trying to do so, is emphatically an Eastern town, and thus, it need hardly be said, quite unlike anything we have here about us. It is not a large town; the houses in it are for the most part built of wood, it is said, to avoid the consequences of the so-frequent earthquakes, so that at all to realise such a town of wood, we must revert to Middle Age London, before the fire, when it too was built almost wholly of wood. It is a little strange to think of how much, in distant days, towns, whether in East or West, were alike, though, at the same time, how unlike and different. Cabul is, indeed, not only of the present, but of the past too. In it we walk through the streets and ways of an antique city. In the north is the king's palace, which, if destroyed, we hope to hear of some note being kept. On a hill near is the tomb of the Emperor Babez, which is kept surrounded by large beds of flowers. It would be curious to see a correct plan of such a town as this, for might not such plan throw light on very many at present obscure matters. Most of the streets are but narrow lanes, many of them not more than 3 ft. or 4 ft. wide. The flat-roofed houses, built of mud, have many of them but a single room, the light coming in through the doorway, and all inhabited to the full. All is not quite so bad as this, for the main thoroughfares are some 40 ft. wide, and the houses two and three stories high.

Cabul was not always the capital city, for the honour of that title once on a time belonged to Candahar, which, though modern, was built on the site of an older city, conjectured to have been founded by Alexander the Great. Candahar is supposed to have 100,000 inhabitants. Its plan, unlike that of Cabul, is quite regular, its four principal streets meeting in the centre of it, where is the market-place surmounted by a dome, of which so much use is made in the East. This is surrounded by shops. The main streets are fifty yards wide, and reach each way to the city gates; the other streets here are quite straight, but narrow, and cross each other at right angles; and all of them have water-courses, or small streams, running through them. It is to be noted that these Asiatic cities have one or more tombs of some famous man or ruler in or near them, always conspicuously placed, and thus perpetually reading the lesson of the shortness and transitory nature of human existence, however high and exalted. Here is a useful lesson at least. In this city is the tomb of Ahmed Shah, covered by a gilded cupola, and held to be a sacred asylum,—so sacred, indeed, that the authority of the king,

absolute as that is, does not extend to it. It may be of interest to mention that, at Ghizni, at one time the capital city of an empire reaching from the Tigris to the Ganges, there is the tomb of the Sultan Mahmood,—the far-famed conqueror of India. It is about three miles from the city itself. It is, too, covered by a dome. The doors of it are of sandal-wood, and were, it is said, from the famous Somnaut Temple in Guzerat.

Cabul is a walled city, with towers and gateways, and a fortified citadel overlooking it, and it is this, though it may seem at first view commonplace, which gives to the aspect of it a strange and Old-World aspect, so much so, indeed, that in the British Museum may be seen on ancient stone and marble slabs vivid representations of city walls, just such as these, with their defenders behind them, and as primitively armed. So like are these that it may truly be said that in the ways of the East a thousand years are but as one day, and that what was still is; and yet, with all this sameness and uniformity, there is always to be found, if looked for, a wonderful variety and a perpetual inventiveness, which makes it new. The bazaars must not be forgotten. They are characteristic of all Eastern cities, and Cabul has them in plenty. It would be difficult to imagine anything more suitable to the place, and more happily contrived for the purpose, than these bazaars; indeed, they would almost seem to be as much needed as are the houses themselves and the mosques. We but name these last, of which so much might be said. They are Eastern and of the East, if anything is, and would seem, perhaps, more than all else, to make of an Oriental town or city a something unique and *sui generis*. In Cabul it is curious to see, not the mosques only, but signs and material evidences of that yet older and more primitive faith, which, doubtless, had its origin in these remote countries of Asia.

It will doubtless occur to very many here to lament the very limited knowledge we really have of Eastern art and architecture. We have no measured drawings of any one of the famous buildings or structures we have named, and but few specimens or examples of even the details of them. Here and there, it is true, we meet with a pictured representation of some famous gateway, or tomb, or tower, or other public building, but hardly a hint at the character of more out-of-the-way and more humble structures, in by-places and in narrow ways. Still less have we any "details" enabling us to judge of the character and special workmanship pretty nearly always to be found in them if carefully looked at. We can but hope that this consideration will not be forgotten, and that, where possible, a record may be kept of objects so remarkable, and so well worth the knowing more about. Opportunities are perpetually occurring wherein a little might each time be done towards making record of some one of these, and occasionally of obtaining actual examples of this Eastern work. Might not a special collection even be made or commenced rather of this peculiar Eastern art and building, or rather some details of them? When we consider what the French did in Egypt in the way of preserving records of its ancient and all but buried work, is it not a little humiliating to think of the many opportunities we have had in India and the East without, as it would seem, a thought about such. A small beginning might surely yet be made.

Thus may it be seen, however imperfectly, how curious a place it is that we are now in, and how worthy it must be of attentive study and long looking at. How much of the past in the present there is to be seen in it, and how different from all about us here must things need be, and how all but impossible it would be to "Europeanise" it, as that term is commonly understood, without making a total change, not only in the Afghan man himself, but in his whole surroundings, and, indeed, without a change made in the very climate itself, under which he lives. And yet a somewhat surely ought to come of so vast a conquest and so world-wide a prospect. That a something is to be learned from a study of Eastern antiquities, art, and architecture, but few will or can doubt, and that even these, suggestive as they are, will not exhaust this newly-opened book is equally certain. Much here might be hinted at. We owe not a little to the East and to Easterns; so much, indeed, according to some, that it would be well if we had less. But when we think of what the Greek, to go no farther, owed to the artists of the East in his day, and look attentively to the results of it, and to the way in which he made use of it, we may soon see how much is to be gained by the study of Eastern art, whether old or new. It opens up a new art-thought, and it remains for those to profit by it who shall read it rightly.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.*

BY PROFESSOR EDWARD M. BARRY, R.A.

ARCHITECTURE A FINE ART AND ALSO AN ART OF UTILITY.

In pursuance of the plan indicated in my last lecture, I now propose to carry a stage further the investigation into some of the principles which, as it seems to me, have governed our art in the past, and must continue to do so now, and in the future; if architecture is to retain that high position amongst men which I have claimed for her.

We have seen, on former occasions, that though Architecture must be ranked amongst the fine arts, she has yet certain inherent peculiarities of her own which give her a separate status from Painting and Sculpture, to say nothing of Music. Not only are the beauties of architecture independent of resemblance to nature, but they are to a great extent, directly opposed to such resemblance.

Having dealt with this question in a former lecture, some years ago, I will not again go through the comparisons between nature and architecture which support the above conclusion. I may remind you, however, that while we then found the charms of nature to include infinite variety, motion, and change; in architecture, on the other hand, we seek symmetry, stability, and permanence. The painter and the sculptor may refer to nature for direct inspiration, but the architect must be contented to be guided by rules and principles which forbid direct imitation of natural forms.

Architecture has, moreover, a definite object, over and above that of giving pleasure. She has to serve the needs of man, and is therefore a useful art, as well as a fine art.

The fire of artistic inspiration may cause the painter to produce works of pure art, because he can no more help doing so, than he can help breathing the air of life. He can pour out his soul on canvas, no one interposing, either to encourage or forbid. The architect, full of similar love for his own art, and equalling, it may be, his brother artist in ardour, must bide his time, and await an external summons. It does not rest with himself to proclaim his power, for he cannot build that for which there is not a previous demand. In other words, architecture, if it were not a useful art, would cease to exist as an art at all.

In arts depending directly on imitation of nature, it is difficult to see how any future advance can be made. A great genius in art can but illumine, with a flash of divine light, that which already exists. The glories of painting and sculpture do not admit of indefinite extension, for they refer to nature for approval,—a nature ever the same, in modern as in ancient days.

Architectural art, however, stands on a different basis, not so free, not so spontaneous, not so joyous; but, on the other hand, more solid, and with an indefinite future of promise. Her mission being to supply the wants of man, she may hope to fulfil that mission better as the accretions of knowledge accumulate, while years roll on. The tendencies of our own mechanical and utilitarian age, while they display much to discourage, yet leave something to hope for the architectural student. They who delight to employ the intellect in subduing the forces of nature to the service of man, are at least proceeding in the same direction as those, who, like architects, claim to practise a useful art, and may even look for an ally in that science of utility, which, to some despondent minds, has seemed to set the seal on a hopeless decadence of art.

Architecture need not, consequently, disdain the title of a useful art,—an art of reason, as well as of imagination,—an art which, while giving scope to the highest artistic sensibility, must, nevertheless, be based on judgment and common sense.

To the art of reason the architect adds that of imagination, without which he can have no claim to the name of artist. He has to combine novelty and originality with acknowledged rules, and with the actual requirements of each case, and when this has been done successfully his achievements may then, and only then, claim the title of a work of art, as well as one of utility.

The savage first decorates his weapons, canoes, and pipes, or tattooes his body. He then turns his attention to building, and a tent becomes a wigwam, and a wigwam a house. Amplification turns the house into a palace, and religion, as it becomes formulated, requires a shrine or temple for its ceremonies. All these successive advances are based upon the requirements of actual use, and so architecture becomes an art of decorated utility.

The Greek temple and the Gothic cathedral thus follow the same law, and much of their charm is produced on the mind by the illustration they afford of a perfect adaptation of graceful means to a utilitarian end. It is by serving noble purposes, that architecture becomes itself ennobled, and not contented with a primacy among the useful arts alone, claims to rank with the imitative arts of painting and sculpture, which, unlike itself, can express ideas by the mere action of the artist, speaking out to us the message that is in him, without a thought of any other necessity than that which is laid upon him by the consciousness, which forces him onward.

The connexion between architecture and utility, having always existed, gives a practical answer to the doubts which are sometimes felt as to its influence in the future. Rightly considered, such a connexion is natural, and to be cherished. Take the question of imitation: we know there is always some fashion in art in these days, which have no style of their own. Public taste may one day turn to Greece, at another to Rome. It may declare the supremacy of Gothic, or discover the merits of "Queen Anne." Now, if we are convinced that architecture must be based upon utility, any direct imitation of ancient models will be recognised as unreasonable and inartistic. We do not want, for example, our Christian churches to resemble heathen temples, however well copied from beautiful designs. The charms of these flowers of art do not bear transplanting, and by thus losing appropriateness they become "matter in the wrong place," and therefore incapable of giving pleasure. We must, no doubt, base our work on the traditions of the past, but the actual copying of existing buildings is not art, but archæology. The use for which a building is required, must affect its architectural forms, or these will fail to satisfy and charm us.

Architecture, therefore, recognises utility as the basis of her work, on which she erects a superstructure of her own, with grace of proportion and beauty of ornament. Without such additions, utility alone would only give us not architecture, but only building.

The greatest works of the present generation, those of scientific engineering, are of the latter class. In them, the actual necessities of construction have alone been recognised, with the results that may be seen, for example, on the Surrey side of London Bridge, where one of the finest old churches we possess is hemmed in by iron structures of surprising ugliness. If the conviction, which I endeavoured to explain to you in my last lecture, were duly recognised, viz., that architecture is a matter of public interest, any such disfigurement of our public places would not be permitted, and while the argument of utility must always have great weight, it would be carefully scanned, and not be permitted, as a matter of course, to override all other considerations. If, for example, it be conceded that to bring a railway into the centre of a town be a public gain, it does not follow that those who undertake such a useful work, have any right to deface the thoroughfares, and destroy the beauty of surrounding architectural monuments. Still less does it follow that ugliness of design is *necessary*, or that the required utility could not be obtained without artistic disfigurement and loss.

If only people really cared for these things, a way would soon be found to reconcile apparently discordant claims; but this will not be done as long as apathetic legislation gives powers to railway companies to do as they please, after which it is useless for us to fill the air with outeries at the natural result.

To combine art with science in utilitarian

* Second lecture. Jan. 15th.

structures must, however, be a task of difficulty with the architect and the engineer, for one of our greatest perplexities will always be that of cost. If the utilitarian purpose can be served by a small expenditure, while a more artistic structure will cost a relatively enormous amount, it must be evident that the latter rests under a heavy disadvantage, in pleading its cause.

You will often be told that it is as easy to make a good design inexpensive as costly, but such a doctrine is open to many exceptions. The use of ironwork, instead of masonry, for example, is a case in point. No one would like to see the iron roofs of our railway stations adopted as architectural precedents, and we had recently, in the case of London Bridge, an illustration of the difficulty to which I have alluded.

Here, it was stated that the bridge was so thronged, that an additional width was required as a matter of urgency for the public convenience. A plan was propounded for giving such extra width by iron arches, added, one on each side of the existing structure of masonry. The cost of such additions, it was said, would be small; whereas, to widen the bridge with masonry in the obviously more suitable manner in an architectural sense, would be so costly, and fraught with such danger to the existing structure, that an improvement urgently demanded by public wants could not be obtained at all if a masonry design were insisted on. Here, then, there was a direct conflict between utility and art. The existing bridge is one of the best specimens of bridge-architecture in the world; but if it were found to be inadequate to the public needs, what claim could it, as a utilitarian structure, advance for exact preservation? If, moreover, it were definitely proved that masonry additions could not be made without imperilling the present foundations and superstructure, and that it must either be widened by iron or not at all, it would be a great responsibility for artists to assume, if it were to be declared that the thousands and hundreds of thousands who use the bridge daily must be for ever inconvenienced by a thoroughfare too narrow for the traffic of a great commercial city.

Fortunately this dilemma was avoided, as the practical necessity of the case was held not to have been proved to the satisfaction of Parliament.

A well-designed bridge is, perhaps, as good an illustration as can be found of architecture as a useful art. Some of you, no doubt, know how picturesque an object such a structure became in the hands of Mediæval architects; as, for example, at Prague, where the old forms of arches and parapets, with the towers and archways of access, still remain.

Old London Bridge, again, is known to many of us, from pictures and engravings, and must have been a highly-interesting subject to the artist. The Ponte Vecchio at Florence is another instance of the same kind, and, like old London Bridge, was lined with shops. London Bridge was, indeed, not only a means of communication between different parts of the same great city, as with us, but it also formed in olden times the gate or entrance to the city of London. Some of the houses upon it were of considerable architectural pretension, with passage-ways through them for the public. A chapel was, in accordance with custom, a portion of the bridge buildings, so that the passer by might have the opportunity of praying for the success of a journey about to be commenced, or of giving thanks for his safe return on its completion.

Looking to the interest, both architectural and historical, which concentrated itself in old London Bridge, its removal in favour of the present structure must have caused many a regret, and might have been expected to excite to frenzy any society for the preservation of ancient monuments, if such a fraternity had then existed. The time came, nevertheless, when old London Bridge, with all its picturesqueness, had to be surrendered, because it did not comply with the principle of combination of utility with art. The old bridge-builders had done their utmost, and had constructed such piers and arches, as were then considered the best possible; but with increased scientific knowledge, these had become intolerable, and an obstructed waterway could no longer be permitted. New London Bridge thus arose from utilitarian considerations, and was in like manner with its predecessor, an example of the constructive art of its day.

Now that science would appear to have adopted iron or steel as the bridge-building material of the time, it is probable that the days of stone bridge-building are over, and that an engineer, if entrusted now with the erection of another new London Bridge, would propose an iron structure. However much we may regret such a conclusion, it appears to be inevitable, as the primary purpose of a bridge is utility.

Assuming, therefore, that in the future the forms of our utilitarian architecture must be modified, it is for those who would cherish and preserve its artistic element, to consider how far such suggested changes are really essential. It is not to be too hastily assumed that ugly structures are convenient, still less that to be convenient, they must necessarily be ugly.

Take another instance of bridge-building. The Menai Straits are spanned by two bridges. The problem was the same in each case, viz., to carry a roadway across the Straits, at a great height, and with the least possible interference with the navigation. The one bridge was necessary for the turnpike road, the other had the more difficult task of supporting the great weight of a railway.

In the first case, the engineer adopted the principle of suspension, and all who have seen Telford's bridge will, I think, admit that far from disfiguring the view, or being a blot upon the landscape, it is a thing of interest, if not of actual beauty, which few would wish absent.

Now, let us consider the case of its younger neighbour, the Britannia Bridge. Here we have the adoption of the trabeated principle of large iron beams laid upon supports of masonry, which rise from the valley beneath, and tower up above the beams, to a height far exceeding that which is necessary for their support.

I well remember the animated discussions in scientific circles as to the form and design of these beams, which were ultimately decided upon as rectangular tubes. In the many discussions of the merits and defects of circular, elliptical, or square sections, I do not recollect that a word was said of architectural effect. Had any one ventured to suggest that this too was an important matter, and that an unsightly structure would be an eyesore for all time, he would have been promptly told that the forms to be employed were an affair of science alone, and that utility, pure and simple, would dictate their arrangement.

In the result, a lovely valley was defaced by one of the most unsightly structures of this mechanical age. Now the question arises, was this necessary? Let us see. The Britannia Bridge has, at any rate, escaped the flattery of imitation, and the next great bridge which was erected in another part of England differed greatly from it. The distribution of metal in the section of the tubes was questioned, and if the bridge was to be built now, it is perhaps not too much to say that its distinguished author, if he were now alive, would almost certainly adopt a different design.

It is known that the great height of the towers is due to the contemplation of the possible necessity for chains of suspension, to aid in the support of the horizontal beams. The architectural result is unfortunate. A pier or a column is an appropriate expedient to support a weight placed on the top of them. Here the tubes are not on the top, but about two-thirds up, and pass through the piers in such a manner as to lead us to wonder how the masonry of the upper parts is supported. The towers, being obviously unnecessary, fail to please, in contrast with those on Mediæval bridges, to which I have just referred, the purpose of which was obvious to every passer-by.

The deficiencies of the Britannia Bridge, in an artistic sense, are not, therefore, really due to the dictates of science and utility, but to imperfect apprehension of them, resulting in the introduction of unnecessary features. We have, consequently, a right to test carefully the assertions of those who bid us accept utility on trust as the all-governing principle of even such essentially useful structures as bridges.

I have chosen the latter class of buildings to illustrate my meaning, because in them, such a principle may fairly claim to be predominant; but even in matters which more naturally come within the definition of architecture as a Fine Art, utility is not found to be necessarily an opponent. Let us refer for a moment to the flying-buttress.

The Gothic architects, in their love of vaulted roofs, soon became confronted with structural difficulties. In edifices of moderate height these were more or less easily surmounted; but the case became different, when great altitude was desired, as in the French churches with their lofty clearstories, and large windows for the display of coloured glass. If stone vaults had to be poised in the air, there would be a thrust somewhere, which had to be guarded against.

The architects of Italy sought for the solution, as we know, in the adoption of iron tie-bars, avoiding buttresses. We saw, however, in our examination of Italian Gothic, that Mediæval principles of art were rather passively tolerated, than actively loved, in the land which cherished the memories of Rome and Greece. Here the horizontal principle predominated in architecture, and the elaborate groined roofs of Northern art found no home. Simple vaults were raised upon walls of no great elevation, and such thrust as resulted was provided for by the simple expedient above referred to.

The Northern Mediæval architect scorned such a device. To him it seemed unreasonable that his work should need adventitious aid to enable it to stand. It should be complete in itself, and built of homogeneous material. Thus arose the invention of the flying buttress. Accustomed to break the surface of his walls by the ordinary solid buttress, it was in his eyes only a natural development to extend it upwards, and connect it, by means of an arch, with the roof, which required its support. By this method, the whole mass of the building became self-sustaining, each part lending to every other that support which might be locally wanting in its own construction.

The buttress, in whatever form, is, therefore, an example of the adoption by architecture of a utilitarian feature, and of the incorporation of such a feature into a style. Like all other things, it ceases to please when exaggerated, but as used by English Mediæval builders, it adds in no slight degree to the picturesqueness of their work.

The vaults in English churches are seldom so ambitious, or the clearstories so developed, as in foreign examples, and the flying buttress has, therefore, been kept with us under the restraining influence of moderation. An example to the contrary is found at Notre Dame in Paris, where the flying buttresses around the apse not only obscure and confuse the architecture, but even suggest the existence of weakness by bringing before the mind, too obviously, the necessity for unusual means of support. In such a case as this, it is the buttress which becomes the principal feature of the design, and reduces the building which it serves to subordination,—a total inversion of the relations which ought to exist, for utility here becomes a burden, and injures, from the artistic point of view, that which it should assist.

Differences of opinion will, of course, exist as to the æsthetic value of the buttress. To those whose taste leads them in Classic directions, the buttress will seem to be fatal to breadth of effect. Others, again, will censure it as suggestive of weakness in the wall to which it is applied. Looking, however, to the predominance of the vertical principle in Northern Mediæval architecture, the buttress seems to be a natural result of such a principle, and thus to take its place readily in a style which expresses vigour rather than repose.

We may see from such instances as I have cited, that architectural beauty is in no slight degree mixed up with considerations of utility, and that features obviously unnecessary for structural purposes, do not please. It must not, however, be inferred, on the other hand, that architecture can ever be content with the fulfilment of the bare necessities of structure.

The eye needs to be perfectly assured of the solidity and permanent character of a work of true architecture. This is why it refuses to be satisfied with the thin ironwork and bare columns of modern engineering. In them scientific calculation of the strength of materials has given us a minimum, where we demand a maximum. We have a work of pure reason, with an absence of imagination, one which addresses itself to the intellect alone, and to which we cannot give the title of art.

The latter involves the idea of sacrifice, of something given to a noble cause, not a nicely-calculated less or more, which starves the higher aspirations of our nature; we need a system of construction which, after satisfying the bare necessities of the case, leaves a margin not only of strength, but of susceptibility of decoration of an elevated character, so that,

for example, the column of necessity may become a beautiful object, which we may love to contemplate.

The scientific daring of the Mediæval architects often led them into difficulties, and the artistic value of great architectural monuments will not be found to consist in the amount of science displayed in their construction. In such designs science may aid, but it must not lead. If it were otherwise, the most perfect interior would be that which had been erected with the least amount of sectional area in its supports, and the study of mechanics would be the road to success in art.

As examples of the application of a contrary principle, the architectural remains in Egypt are, perhaps, the most striking. Their huge columns are out of all proportion to the work they have to do, and though they cannot be altogether justified, and should far less be imitated now, it is impossible to deny the solemnity and impressiveness of the Hypostyle Hall at Karnac. The great massiveness of Egyptian work satisfies one of the demands of the lover of architecture, but not the rest. It gives the sense of repose and permanency which he desires; but he looks in vain for the grace, combined with fitness, which perfect architecture should display. The temples on the Nile were, perhaps, appropriate for the exercise of a religion of outward ceremonial alone, and thus the enormous columns may be accepted amidst the mighty sphinxes, and huge colossi, which sought to impress the mind with wonder by their mass and dimensions. Architecture, with ourselves, however, must be a more reasonable art, and a mere worship of bigness is no longer tolerated. We cannot suppose that any great buildings can again be erected for purposes of display alone; and thus architecture must needs be with us,—whatever it may have been in the dim past,—an art of utility.

If the Egyptians help us to illustrate one side of the argument, we may also find existing examples of the opposing principle, showing the effects of any exaggeration of scientific skill in architectural design.

In our Norman cathedrals we see an almost Egyptian superfluity, although, from faulty masonry, the strength is not always as great as it seems. Starting from such types, the architects of the Middle Ages diminished piers, increased the span of arches, and built stone vaults, delighting in the exercise of their constructive skill. Using small stones, they adapted their work to the material, and displayed the utmost ingenuity, and power of contrivance. At length the limit of beauty was reached, and architecture ceased to interest, when it became a question of erecting the widest practicable vaults, on the thinnest of pillars, and piercing solid walls with the largest possible windows, having the most attenuated mullions.

We see the effect of such exaggeration more often abroad than in this country. The Mediæval architects of France and Germany seem to have been more daring than our own, and while they achieved splendid results, fell also into snares which the more quiet and sober English judgment avoided. Thus, at Cologne cathedral, the supports occupy one-tenth of the area enclosed, while at Salisbury they are not less than one-eighth. In the former example, the result is a want of dignity and apparent solidity. The columns, though numerous, are not impressive, and although the dimensions are magnificent, the interior as a whole does not produce the effect attained by many smaller buildings.

Grandeur of size is doubtless one of the chief elements of architectural magnificence, but in the absence of other qualities it will not alone satisfy us. If a building is not beautiful in our eyes, it gives us no pleasure to be told how many hundred feet it is long, or how many rooms it possesses.

To give their full importance to large dimensions, we require a varied and appropriately contrasted detail to supply a scale to the whole, and so confer value on greatness.

Every one knows how strikingly the want of such detail is found in St. Peter's at Rome, where, in order to induce appreciation of size, you are told the length of a carved angel's wings, or the size of a cherub's toe.

Something of the same defect may, I think, be noticed at Cologne, principally arising from the thinness of the columns which support the roof, and their too monotonous uniformity. The view is too complete. The art is too obvious, and little is left to the imagination. Such deficiencies of variety and contrast are seldom found in our best English examples, and though Salisbury Cathedral has not the same pretensions as Cologne, and although the interior must yield to the exterior in architectural effect, we are led by it to conclude that its designers could have erected a church which would have surpassed its rival if similar opportunities had been afforded them.

There is another feature with which we are familiar, adopted by architecture at the bidding of utility, viz., the high-pitched roof, eminently suggestive of the difficulties of climate, against which the architect has to contend.

Allowing much for the influence of race in the styles of architecture adopted in various countries, that of climate must never be overlooked. In the sunny lands of the South, the problem is rather to obtain shelter from the sun than anything else. A roof in the East is valued as a place from which to court the evening breezes after a sultry day, and on which to sleep in the open air, without too much exposure. Under these circumstances, the roofs assumed in such countries the aspect of flat terraces.

Proceeding northwards, different questions arise, such as protection from rain and snow, from undue variations of temperature, and the like. A sloping form, with projecting eaves, because thus dictated by utility, and, as usual, architecture listened to her behests. From the simple covering of the Swiss châlet, she advanced to the high-pitched roof, with gutters and ornamental parapets of the thirteenth and fourteenth centuries. With high roofs over the main buildings, high-pitched spires, and pinnacles became associated, by an obvious congruity, and a vast wealth of design was lavished upon these details, with gables, and dormer windows, and all matters connected therewith.

Having accepted the high roof, architecture dealt with it further by making it her own by means of decorative lead and metal work. It thus became an acknowledged past of Mediæval architecture, and, indeed, one of its chief peculiarities, if not one of its greatest beauties, carrying onward the development of the principle of verticality which governed the style. It was doubtless, from intuitive conviction on this point, that the Mediæval architects adopted a higher pitch than was rendered actually necessary by utilitarian considerations, and made their gables of extreme steepness.

The high roof in such cases serves a double artistic purpose. By its transverse section and its consequent gable, it harmonises with the general vertical principle of Gothic design in the end elevation; while, on the other hand, when seen from the side of a long building, such as the nave of a cathedral, it supplies an element of repose, and prevents the same principle of verticality from being unduly exaggerated. The buttresses and pinnacles which divide the bays would otherwise dominate too completely, not only by reason of their deep shadows, but also from the breaks they would produce in the sky-line.

An illustration of my meaning may be found in Westminster Abbey, where the architectural value of the high roof in relation to the points referred to is very apparent. The long horizontal line of roof gives, as we may see in this and other instances, an air of dignity to the mass, which would otherwise be lacking, tempering the vertical vigour of Gothic work with the quieter influence of the horizontal principle, cherished by Classic art.

In dealing with the roof, as with every other detail of their work, the best architects of the Middle Ages adapted their design to the nature of the materials employed, and in this respect the English wooden roofs have an especial fame. In the great cathedrals, and other buildings of the first class, the roof being only for a necessary protection to the stone groining below, did not possess any internal architectural character; but in the great majority of buildings of less pretension, wooden roofs were used, with framing visible from the interior, and designed with the utmost care.

There is, I think, no detail of English architecture more worthy the attention of the student than its open timber roofs. In those of the best periods, every necessary part of the construction is displayed, and rendered sightly by appropriate ornament. In cases where cheapness and plainness were desired, we may find nothing but the rafters and other details of necessary construction; but even in such structures the arrangement is generally pleasing, and the rafters are so placed as to supply, by their interlacing outlines, an effect of perspective which gives to the apparently only utilitarian composition, a title to be ranked as architectural art.

We, who are familiar with the beautiful roof of Westminster Hall, do not need to be reminded of the constructional skill and the artistic genius which worked hand in hand on the grander and more stately designs of the Middle Ages. The roof at Westminster covered a royal palace, and, like another piece of architecture, of which we heard last week, was, indeed, "fit for a king."

It would not be difficult to find other instances of architectural detail, which would illustrate the argument on which I am now insisting; but I think I have said enough to prove the intimate relations between art and utility in architecture, in regard to which, while I claim for her nothing less than a place among the Fine Arts; I do not, on the other hand, consider it beneath her dignity to accept the title also of a Useful Art.

We have seen that without usefulness architecture would not have been called into existence, for it was only after the first demands of necessity had been complied with, that art was invoked to add a refining grace to the structures of utility. Architecture thus called upon, devoted her energies not to constructing ornament, but to ornamenting construction, and her success in so doing is not without encouragement for the future as science advances.

The age of no-architecture in this country, now happily brought to an end, was fertile in shams and concealed construction. The great engineering works of the present day have at least taught architects that they need not be afraid of exhibiting structural details, although it is unfortunately too obvious that such works have not solved the problem of uniting truth with beauty in such a manner as to become artistic delights, as well as scientific triumphs.

There is plenty of scope for the architect in uniting art with utility. We are told sometimes that utility is so far to rule, that every portion of a design should declare its use, whether such use be noble or ignoble, and however the architectural composition, as a whole, may be affected by such partial treatment. We see daily, in consequence, designs of shreds and patches, which, while affecting to make a god of utility, are often in reality not convenient, while they offend the sense of fitness, which demands dignity and elegance as well as convenience in architectural work.

Nor is this the only evil. In paying tithe of mint, anise, and cummin, the weightier matters of the law are too often neglected. Young architects are apt sometimes to act as if it were a triumph of their art to throw down at random parts of a composition, and accept the result. Irregularity is supposed of necessity to give picturesqueness, and the external quaintness of a house is more studied, than either the purse or the comfort of its inmates. This, I need hardly say, is a complete inversion of the principle that our art is based upon utility.

To indulge in such tastes is doubtless far easier than to study carefully the requirements of each building, and consider how they can be artistically complied with. This, however, and no less, is the duty of the architect, and only by performing it thoroughly can he achieve complete success. It is useless for a house, for example, to be delightful to the architect, with gables, turrets, and dormers, if the owner declares that to such matters have been sacrificed warmth, comfort, and ventilation. A design of architecture must always be a compromise, and when one class of considerations obtrude themselves with an exaggerated prominency, the others become more or less sacrificed.

Excepting in large structures, I should advise the student to be on his guard against needless irregularities of plan. In an artistic sense he has usually no greatness of dimensions or breadth of effect to throw away, and from the utilitarian point of view, irregularity means too often expense and want of comfort, from an excessive surface of external wall, and complication of roof.

In setting down his plan on paper, the young architect will save himself from much difficulty, if he will, from the first, bear in mind the arrangement of his roof, so that he will not draw any part of his plan without knowing, in his mind, how he intends to cover it. The same caution may be given as to thinking from the first of sanitary necessities, warming and ventilation; subjects to which architects have given

too little attention, apparently under the idea that what suited our ancestors will suit ourselves. No conclusion can be more erroneous. When once public opinion is fully convinced that improvements can be had, it will insist on their incorporation in our architecture; and, unless architects fully recognise this fact, it is inevitable that their province will be even more invaded than has hitherto been the case.

If the noblest works of our olden architecture have been based upon usefulness, and have satisfied the wants of their time, we cannot complain if a similar necessity be laid upon ourselves, and must think it no hardship if in an age of universal questioning, we are called upon to give a reason for what we do.

Architecture, of course, is not all utility, and has in her higher character, as we saw in the last lecture, claims on the consideration of society at large. She is bound to assert her p'ace in regard to the public buildings of the country. In this position, at any rate, she can tolerate no derogation from her position as one of the Fine Arts. It is her province to erect temples of worship and to dignify cities. In humbler works it is her privilege to carry a feeling for art into the homes of the thousands. In fine, she has to unite beauty with utility, and apply the result to the service of men. It should not surely be said of our art that all the good is over. We have the past for instruction, and not for blind imitation. The powers of man are not diminished since the days of the artistic giants of antiquity, while science has conferred upon us privileges of which they little dreamt. Architecture, therefore, pursuing her mission, and supported by Art on the one hand, and by Science on the other, may, if true to herself, still look hopefully forward; for, in the language of our President's address, on a recent occasion,* in which he sums up the argument in better words than I could use,—

"Certain it is that architects may look with a proud confidence into the future, for they practise an art raised on an immovable basis of science, clothing itself in forms of abstract beauty, enriched by the co-operation of sculpture, and yet made lovelier, when it chooses, by the charms of colour. And though no man shall invent a new style,—as the foolish phrase goes,—for styles are not invented, but evolved; I do not doubt but that in due time the tentative and eclectic phase through which architecture seems now to be passing will give place to more homogeneous development, in which, whilst the individuality of the artist finds free room to assert itself, the requirements, physical and intellectual, of each particular country will achieve a more definite and distinctive expression." †

SOME NEW FRENCH ARTISTIC BOOKS.

To no one, it may be said, more than to the publisher, and, indeed, to all connected with the press, is the rapidity of the passage of time in the present day more forcibly brought home; no sooner has the long and slowly prepared batch of new works been cleared off the shelves than, with scarcely a day's repose, recommence the necessary preparations for the "forthcoming season." Such considerations rarely occur to people as they turn over the handsome volumes which so sorely tempt the purses of the "limited incomes," and which it is one, or ought to be one, of the pleasures of the wealthy to buy. It is with the end of the year that the greatest activity in the book-trade becomes remarkable. If, in the midst of the existing general depression of trade and the money market, our English publishers have not felt themselves warranted in great outlays, such cannot be said of their French brethren. The Paris book-trade has always excited the almost envious, always admiring, surprise of the English publisher who visits the French capital at the close of the year. This season, the Paris publishers have been exceptionally active, and, among their attractive lists, the only difficulty is to choose which works to mention. Selecting even a speciality, the artistic works, these are in such goodly number that, in the limited space at our disposal, their contents can ill be described.

Without further preamble, tempting as might be a digression on the reasons why so great a diversity of opinion should exist between French and English publishers in the matter of the nature and beauty of the works they severally produce, and their respective and strangely differing views relating to the value of such works as "commercial successes," we name a few. It may be said that it is scarcely patriotic to praise foreign works, but their pages afford such information, their contents are so suggestive, and a knowledge of their existence is so essential to the student and the professional man, that it would be wrong to pass over in silence some of the artistic works recently published in France.

Honour to whom honour is due. Let us commence with the choicest of editions, with the prince of painters, "L'Œuvre Complet de Rembrandt," described and commented on by the able and well-tried pen of M. Charles Blanc, a work consisting, as the prospectus sets forth, of a catalogue *raisonné* of all the prints of the master, accompanied by the reproduction in *facsimile*, by new processes, of all these prints, 356 in number; a collection certainly rare and varied. The charm of the art-lover, the despair of the student, these pictures of anchorites and adventurers, patriarchs and beggars, hermits in meditation and quacks on the tramp, or scenes from the Evangel, are all to be reproduced in these pages. Every sentiment of humanity, every action and every age of life, every passion and situation of the heart, have been expressed by Rembrandt and his inimitable needle. Till the present moment the possession of the prints of this great master was the special privilege of a few favoured individuals. They were alone to be seen in the great national collections, or in the hands of a few wealthy amateurs, while it was only in certain museums, such as that at Amsterdam, where certain unique proofs and prints could be seen at all. To collect the whole series of these works a princely fortune would be scarcely adequate, even were the proofs to be found for sale,—London, Paris, Amsterdam, and Vienna, with a few amateurs, owning all the finest. It will be remembered that about four years ago M. Charles Blanc published two partial editions of Rembrandt; it is the success of these works which has induced the author to produce this complete edition. Since that time the extraordinary improvements introduced into the art of mechanical engraving have rendered a task otherwise impossible thoroughly realisable. The reproduction of the new work, without the slightest retouching, will show the prints in all their original perfection, and directed by the artistic skill of M. Blanc and M. Delangle, we may rest assured that the results will be satisfactory.

This work takes, as may be easily imagined, a foremost place on Messrs. A. Quantin & Co.'s ever-tempting list; the public are not to see the work till March next, when the three folio volumes and the album will be published. It is essentially to be a publication *de luxe*; there are only to be printed 500 copies, all numbered, 400 at 20*l.* each, 80 at 40*l.*, and 20 exemplars on Whatman paper, at 80*l.* each.

Still turning over the pages of Messrs. Quantin's catalogue we find the collection of "the great masters of art" (of which series we have already reviewed in these pages the "Hans Holbein") has received an addition in a companion volume on a school of strangely different artists, François Boucher, Lemoine, and Nataire, by M. Paul Mantz, a book containing a large number of reproductions of the works of these favourite artists. It is a transition somewhat sudden from Holbein to Boucher,—the severity of the great Swiss sixteenth-century master meeting with a vivid contrast in the eighteenth-century creation of the artist-friend of Madame de Pompadour; but the public will not complain, for the later artists at the present moment in France may be certainly considered the more popular. In the same collection Van Dyck, Ostade, Titian, the Early Flemish Masters, Albert Dürer, Leonardo da Vinci, Watteau, and a number of others will follow. It seems, indeed, as if the present century will use up all the sources of unreproduced art which remain.

"L'Art Ancien" and "L'Art Moderne" at the Paris Exhibition of 1878, two large octavo volumes, contain several hundreds of engravings and wood-cuts, prepared under the able direction of M. Gonse, the editor of the *Gazette des Beaux Arts*, aided by a large staff of well-known art-writers. These two volumes may, indeed, be considered as the two most serious and complete works which have as yet been published on the great World's Show of 1878, an inventory of the art-treasures which it contained, an illustrated history of art in a most attractive form.

The long and active life of the sculptor Carpeaux is gracefully told by M. Ernest Chesneau in a volume containing a large number of illustrations reproducing the principal works of the master; such a volume as it would seem only French publishers are willing to produce after the death of any distinguished artist. Among the many other tempting artistic novelties of Messrs. Quantin's catalogue let us not pass over a new illustrated edition of "Göthe"; "Picturesque North America," from the original work by the late Cullen Bryant; and in the "Bibliothèque Archéologique," the first two parts of a princely work which is to take several years to complete, the "Renaissance en France," by Léon Palustre, in which each important architectural monument of that period existing throughout the old provinces of France will be minutely described and illustrated. It is a work of which we hope, on a future occasion, to have more to say. It is only with regret that the numerous other instructive artistic works in M. Quantin's list have to be passed over in silence, other catalogues claiming notice.

The long-established house of Firmin-Didot, if not quite as old as that of Nyon, on the Quai de la Monnaie, which unostentatiously shows above its door the date of its foundation, 1580; if not even as old as the "Old Corner Book-Store" of Boston, U.S.A., of Ticknor & Field, founded in 1712; or if not of so respectable an antiquity as those of Longmans or Murray, Firmin-Didot & Co., in their old establishment of the Rue Jacob, have produced this year a number of interestinga rtistic novelties,—and of such we can alone speak.

Foremost in the catalogue is another volume by the industrious "Bibliophile Jacob," Paul Lacroix, on "The Seventeenth Century, its Institutions, Usages, and Customs in France, 1590—1700"; another volume added to the valuable series which has afforded so much information to the student unable to refer to the original sources such as can alone be consulted in the libraries and museums of the great capitals. The success of the last work produced, that on the "Eighteenth Century," may be judged when it is stated that in France alone more than 50,000 copies were sold. The "Seventeenth Century" will probably be no less popular; in every respect it is equal, if not superior, to its predecessors, in its variety and the characteristic choice of engravings and costumes made among the innumerable works left us by the artists of that period. It is impossible, even after alone looking at the illustrations of the volume, not to have a very clear idea of the society of the time, the strangely-different classes which composed it, and the manners and costumes peculiar to each, in an age when, so unlike ours, every grade was broadly marked. The most characteristic artist of the epoch, of course, was Callot; it is he who introduces one most successfully to the habits of the greater part of the nation, and his familiar etchings form a great feature in the volume. The soldiers of the armies with which the "great Condé" and Turenne gained such laurels for Louis Quatorze are here before us, in all their paraphernalia; and with them, many a charming scene of court life, in the mention of which let us not pass over the faithful work of Abraham Bosse; Versailles and all the life of the court, which Saint Simon so sarcastically described, lives here; the whole seventeenth century, with its extravagance and its marvels, its political and social intrigues, its costume, its customs, its characteristics and its history, literary and artistic.

Another superb volume on Dido's list is "Egypte," from the German of George Ebers, a small folio work, the valuable text of which is profusely illustrated with more than 300 fine woodcuts. Egypt is brought before the eye from the Pharaohs to the Khedive, in all the various phases of its strange history. The work will be read with interest by many who till now have been unable to refer to its pages. Egypt and her history is being daily brought more and more clearly before us, but it is not to Egypt that the researches of our archæologists must be confined; we must advance into Asia, the cradle of the human race. There, we may rest assured, numerous discoveries await

* Discourse delivered to the students of the Royal Academy, on the distribution of the prizes, December 10, 1879, by Sir Frederick Leighton, P.R.A.

† Professor Barry writes,—"I shall feel obliged if you will kindly allow me to correct a printer's slip in my lecture, published in last week's *Builder*, giving a quotation from Mr. Prinsep as follows: 'a real artist would have touched with repainting.' It should have been, 'without repainting.'"

the searcher. Have we not a signal proof of this only recently afforded in the valuable information brought us by the indefatigable care of Mr. William Simpson, from the yet unexplored regions of Afghanistan? Our archæologists have paid too exclusively their attention to the Greeks and the Romans. One has only to open M. Delaparte's interesting work on the artistic marvel of Cambodia, of which we had a glimpse during the last Paris Exhibition, to be convinced of this fact. Let our English archæologists be active, and do for their colonies what more than one Frenchman has done for French dependencies.

At the present moment, when the picturesque pile of Gothic architecture so familiar to every visitor to Normandy as Mont Saint Michel is threatened with possible destruction, the new work on that famous old abbey-fortress, by M. Germain and M. Carrayer, the Government architect, who has recently conducted the restorations of the monument, will be additionally interesting to public and profession alike; under the care of M. Carrayer, a number of exquisite drawings have been prepared, and are here reproduced. It is needless, we imagine, to enter more fully into the contents of this work; to those interested, the mention of its publication suffices, while the extreme cheapness of the works, even the most profusely illustrated which the French produce, places them within the reach of the most modest purse. Most of Didot's other works have appeared already some little time, and are, therefore, comparatively familiar; Louis Veuillot's "Jesus Christ," a study on Christian art, containing more than 200 illustrations and chromolithographs; "La Sainte Vierge," by the Abbé Maynard, also illustrated; Wallon's "Jeanne d'Arc"; Paul Mantz's "Chefs-d'œuvre de la Peinture Italienne," and many others deserving of mention.

The volume of M. Duruy, the "Histoire des Romains," from the most distant times to the invasion of the barbarians, attains a double object, affording instruction and pleasure at the same time. It is a work which, in addition to telling the romance of Roman history, lays before the student the image of the innumerable remains of a civilisation which has almost disappeared, its monuments, its works of art, its vases, and its coins, in illustrations which deserve praise for their correctness. It is especially from the medals that the greater number of the authorities have been taken. The collection at the Bibliothèque Nationale alone includes more than 2,000 medals, which, in addition to numerous other sources of reference, have been largely put under requisition. We can only hope that, when the work is translated and published in England, as doubtless it shortly will be, a number of George Scharf's exquisite Classic illustrations, so lovingly transferred to the wood and cut by the skilful hands of Sam Williams, may be laid under contribution.

Of more modern Rome, we have in M. de Zarbac's "St. Pierre de Rome" a complete historical, religious, artistic, and even political monograph of the famous basilica,—a work which will doubtless be welcomed by not a few students.

Let us look at Hachette's list. Styled an "édition de grande luxe," the "Histoire de Tobie," by Lemaiste de Sacy, with its large number of illustrations, will be acceptable to many readers; but in M. Gourdault's work on Switzerland ("La Suisse") we have a book which more strictly belongs to our domain. "La Suisse" takes its place this season among the valuable and profusely illustrated collection already published by Hachette, and which has laid before us "Rome," "Italy," the "Adriatic," "India," and "Spain"; and his second volume on Switzerland (the first appeared last year) will not suffer in comparison with its predecessors. The legends and historic traditions of the Swiss, too little known, take a prominent place side by side with graphic descriptions of the country; illustration aids in the work, and in this volume the most picturesque portion of Switzerland is described; the Grisons, St. Gothard, so soon to afford another tunnel communication between Italy and the rest of Europe; the now much frequented Engadine, the Lake of Constance, the Falls of the Rhine, &c. The Upper Rhine possesses, perhaps, a grandeur scarcely found in the Bernese Alps. Every one cannot go to Switzerland, as in the past, the proverb tells us it was not in the power of all to visit Corinth; those whose purses cannot satisfy the grasping exigencies of Swiss hotel-keepers may, however, at less cost, turn over the attractive pages of this volume. M. Gourdault's book will be an historical remembrance when fashion has deserted the beautiful Swiss valleys. It is scarcely a century old, this fashion. Benvenuto Cellini, traversing, to come to the court of Francis I., the most beautiful portion of Switzerland, does not devote a word to it; Montaigne alone remarks the huge stoves. The travellers of the last century (we all remember how Beckford posted through picturesque Germany and Switzerland) utter sighs of satisfaction when they leave behind them the Alpine gorges, and enter the flat monotony of the plain; the Canon Grunner, a historian of Switzerland, having to cross the Gemmi, one of the most picturesque of passes and one of those now most frequented, derives its name from "Gemitus," from the groans which the traveller utters who is obliged to venture into its recesses.

The "Histoire de la Gravure," by M. Duplessis, the curator of the Print Department of the Bibliothèque Nationale, is a work which, by the care with which it is compiled and illustrated, will afford valuable information to the lover of art. M. Duplessis gives us in this volume, published at the modest sum of 1*l.*, and to be purchased everywhere with the usual trade deductions at 16*s.*, thirty-seven carefully-executed engravings, heliogravures, on tinted paper, and as many again in the body of the work, which is itself a marvel of careful printing. Added to this we have a detailed history of engraving, by means of which the reader is able to follow the progressive developments of the art; and comparison is rendered easy between the first rude but characteristic block-book prints with the etchings and engravings of the later masters. Text and illustrations form together a history of engraving, giving a sketch and an idea of each period, of each school, of each artist. We take one exception to the book. Though the English school finds a place in the work, we scarcely think due justice has been done to our artists by the curator of the Print Department of the French National Library. Among his priceless folios might have been found many exquisite works by English artists, and we must note that the reproduction of one of the series of Hogarth's "Marriage à la Mode" is far from true to the beautifully-executed original. France, of course, receives full justice at the hands of the author; as also Italy, Germany, the Low Countries, and Spain.

The "Nouvelle Géographie" of M. Elie Reclus deserves mention, the fifth volume, treating of Scandinavian Europe and Russia, being published this season; as a valuable source for reference we recommend to students M. Elie Reclus' work, in which already Greece, Turkey, Roumania, Italy, Spain, Portugal, France, Switzerland, Germany, Austria, Belgium, Holland, and Great Britain, have been fully treated. M. Guizot's "History of France," modestly "told to his grandchildren," is completed this season, and its illustrations will delight the young long before they are able to grasp the solid text. Among the artistic works, M. Wiener's "Peron et Bolivie," a descriptive and archæological journey, illustrated with more than 1,100 woodcuts, representing the monuments, types, customs, arms, utensils, and costumes, of the old inhabitants of this comparatively unknown country, deserves mention. The rest of M. Hachette's tempting list must, we are afraid, remain undescribed. The untiring zeal of the eminent publisher in the popularisation of science and art is well known on both sides of the channel, where his works find a place on the shelves of every library of reference.

M. Robida has this season added another volume to his series of "Old Cities" which have already taken us with his notes and recollections and spirited sketches through Italy and Switzerland. This season we have the "Old Cities of Spain," an octavo volume with more than a hundred capital sketches of types of scenery and architecture, published at the excessively modest rate of eight francs. It is alone the modern processes of reproduction which have enabled the publisher to offer such a work at this price; we have in M. Robida's "Old Cities of Spain" one of the first of a large number of travels which will be, we trust, in course of time written and illustrated by the same hand, and inexpensively reproduced. The series has commenced with an excellent example, and were other travellers to illustrate as well their journeys, we should indeed have in course of time a valuable amount of information. Published by the same house (a new and energetic firm,—Maurice Dreyfous) deserves mention the French translation of Mrs. Brassey's popular work, the "Voyage in the Sunbeam," with the Hon. Arthur Bingham's illustrations; the work received high praise at the French Academy, and doubtless, now that it is offered to the French public, will acquire a success as genuine as that in England. Our task is far from completed; there remain many other works worth notice; M. Jacquemin's "Histoire Générale du Costume," from the fourth to the twelfth century, which we must thus only hastily mention; the "Life and Labours of Thorwaldsen," by Eugene Plon, among many other works produced by that literary publisher; Charles Yriarte's "Goya"; and, as costume has been referred to, an interesting work by M. Jullien, "L'Histoire du Costume au Théâtre," in which all the strange vagaries and licences taken with costume by the famous actors and actresses of the past, and of the present also, are illustrated both in word and picture. Alfred Michiels' "Petits Maîtres de la Peinture Flamande"; another valuable and learned work on costume, by M. Demay, "Le Costume au Moyen Age, d'après les Sceaux," an octavo volume, containing no less than 600 vignettes and two chromolithographs, and 500 pages of text, treating of this interesting subject, all deserve reference. In this latter case the small price of 20 francs (publishing price) merits notice. Another profusely illustrated work must not be passed over, "Saint Vincent de Paul," by M. Veuillot. Also a curious work, which will appeal to bibliopoles and artists alike, the "Hypnerotomachia; or, Dream of Polyphile," by the monk Francesco Colonna, reproduced from the original edition published in 1492, by Aldus, at Venice, with the beautiful archaic illustrations, the work, it is said, of Mantegna, but more probably of Benedetto Montagna, his contemporary.

Messrs. Hetzel, among the new works of the season, offer the last work of the late Viollet-le-Duc, "Histoire d'un Dessinateur," which completes the series of "Histoires" in which the eminent artist endeavoured to popularise the knowledge with which his years of study had familiarised him. It is impossible, however, not to feel somewhat disappointed at this latest work of the deceased architect. He has adventured on a field difficult to tread, though doubtless his work will be welcomed by many as a useful and inexpensive handbook to the mysteries of draughtsmanship.

We have left untreated the numerous professional works which have appeared this season. Of these we hope at a later period to be able to speak. We have said enough to show, we imagine, that the Parisian publishers have not been idle, and may their activity rouse a corresponding energy on own side of the Channel.*

HONOUR TO THE SPADE.

It rarely falls to the lot of the public writer, or even of any journal, to ascertain how much of the success of the cause that he has advocated may be due to his or its own exertions. When he has been first, and perhaps for a long time alone, in the field, he may perhaps be pardoned for some degree of self-gratulation if, years later, the object of his writing assumes the form of admitted truth. Still it will always be his scientific, rather than the personal, triumph that gives solid contentment. These remarks are suggested by a military report on the Russian-Turkish war, which has been drawn up by Lieutenant F. V. Greene, of the United States Engineers, lately military attaché to the United States Legation at St. Petersburg. The military criticism of the book does not here concern us, interesting as it is. Our reference to it is caused by the testimony borne to the views which, more than twelve years ago, we endeavoured on more than one occasion to enforce. The subject of the use of the spade as a defensive weapon will be found discussed in one of our numbers for September, 1867, as well as earlier. One main lesson of the Turkish war, according to Lieutenant Greene, is identical with that which we urged on our own military authorities. Lieutenant Greene holds the highest opinion of the value of the spade. He says

* It is curious, as a contrast to the superb edition of Rembrandt's works, the most ordinary copies of which are to cost 20*l.*, to observe the successful efforts of the French publishers to bring their well-printed works within the reach of every purse. It may be mentioned that *at their published prices* little more than 10*l.* would purchase all the purely artistic books to which we have referred.

that it should be a tool made for the sole purpose of digging, and not a sort of compromise between a tool and weapon. The Russians were, in the first instance, almost wholly unprovided with proper intrenching tools. So much was this want felt, after the check at Plevna, that General Skobeloff caused his men to carry with them the spades and picks which had been there used, and they carried them in their passage over the Balkans. Lieut. Greene says that their spades were inconvenient and heavy, weighing over 5 lb. each, but that each man had learned by hard experience that his individual life depended on his musket and his spade, and he took care to lose neither the one nor the other.

We hold that as, in the Greek Republic, it was the shield rather than the sword which was the weapon of honour, because it was better service to the State to save the life of a citizen than to take that of an enemy, so in future wars the honour of the spade should be held higher than that of the rifle. The French, the Austrian, and the German strategists are now all giving attention to the use of the spade by the troops. The Austrians and Russians will in future carry one spade to every two men; the Germans, one to every four men; and picks, large spades, and axes will be carried in the company wagons.

FROM THE BANKS OF THE SEINE.

IF, by the exceptionally severe weather which has not spared us within the last few weeks, we have had much suffering to endure on the banks of the Seine, physically and pecuniarily, much valuable experience has been gained. In future, with the approach of winter, preparations will be made, it is to be hoped, for a more ample supply of fuel to so large a capital; and in view of the inevitable break up on the river, which this year has caused such terrible damage (nearly 100,000*l.* worth of injury is calculated on that portion alone of the river which flows between the Paris fortifications), as in cold countries, where the thaw is known to produce such results, all boats, and especially small craft, must be put into places of safety. Never probably has the truth of that time-worn and cruelly curt maxim, *experientia docet*, been more practically illustrated than by the effects of the winter of 1879-80. In the professional world an unexpected danger has been discovered in the iron pillars now employed in house-building for the double purpose of support and as waste-pipes. The water freezing inside them, the thaw has broken a number, seriously endangering the strength of more than one house in which they had been used; another equally explicit maxim might be applied in this case for the future,—*verbum sap.* Of course, it is needless to refer to the numerous mental determinations of householders on the matter of heating and stoves "for next winter." In the general break-up on the river, no damage was done to the various bridges, though the remains of the ill-fated "Pont des Invalides," which the engineers have been endeavouring to patch up for some months past, were carried away in the general crash.

Since we are on the banks of the river, let us not forget to refer to the startling announcement made not long since by more than one journal that the long-dreamt-of idea of Paris being a seaport had at length been realised. It appears, in fact, that this is more or less the case; for at the venerable and interesting old suburb of St. Denis there exists a ship-yard from which was successfully launched, not many days since, a despatch-boat for Senegal. It seems, indeed, that there are being built at this moment in the yard of Messrs. Claparede & Co. twenty vessels of 600 tons, destined to open the port of Paris to ocean navigation. It has more than once been brought up as a want in Paris, the picturesque appearance of the London Pool with its fairy masts; there seems now every possibility that the banks of the Seine will be invaded by craft somewhat more substantial than the existing *Mary Anns* and *Sallys* of Blackwall or London.

England and English science have been gaining laurels within the last few weeks in the person of Mr. Crookes, the eminent chemist, who has been delighting French audiences,—composed of the most scientific students in the world,—by his experiments on radiant matter. His theories have been received on the banks of the Seine with unfeigned enthusiasm.

A Parisian contemporary, on the return of the inevitable rent-day, the 15th of January (the year in Paris for lodgers and proprietors is divided into four "termes"), has published some curious statistics connected with the selling-value of house property in Paris in this year of grace 1880. Lodgers, of course, complain grievously of the rate of rents, and proprietors as naturally refer to the "instability" of their investments. But how to explain the rapidity with which new houses rise in every direction? Is it not because landed property is one of the safest investments which exist in the present day, in spite of the risks and charges to which it is exposed?

The Parisian municipality have this year commenced a new system in the publication of their mortality returns, and not before it was needed. The bulletin is composed of four pages; the first shows the births and the deaths, the maladies being classified in categories,—the deaths according to age. The second page is taken up by a table showing the mortality in *arrondissements* or parishes; the third page establishes a useful and valuable comparison between the mortality of Paris and a certain number of great cities in France and abroad. Finally, the fourth page shows a map of Paris, with the indication of the contagious maladies in each neighbourhood.

The forthcoming exhibition at Melbourne has roused no small amount of interest on this side of the channel. The Government not long since issued the rules for the exhibitors, and, doubtless, urged by the interest expressed in the artistic and manufacturing world, M. Tirard, the Minister of Agriculture and Commerce, has sent a warmly-expressed circular to all the Chambers of Commerce, of the arts and manufactures, throughout France. Universal exhibitions are no longer solely extraordinary assizes held in the great capitals of Europe; they are becoming generalised, and are losing their first character of mere solemnity. Without ceasing to be shows of intelligence and of progress, they have become a need,—a habit,—an indispensable stimulant. The Minister, urging the fact that Australia is a new country, begs the French manufacturers to see that France is well represented at Melbourne, not from motives of pride, but from motives of self-interest. Let our English manufacturers look to their laurels; the colonies are large customers, and might transfer their custom to the rival "over the way."

As a last echo of exhibitions, let us not neglect to mention the fact that on the 15th inst. was opened, at Algiers, the first exhibition of fine arts held in the French African colony. Also, it may not be uninteresting to some of our readers to learn that the notice of the forthcoming *Salon* for the 1st of May has been already issued. All drawings, pictures, &c., must be sent in from the 8th to the 20th of March; and works of sculpture from the 8th to the 29th.

A FAREWELL TO GRAY'S INN LANE.

THE words of parting will be few and short. Nominally, Gray's Inn-lane has departed, having, a few years ago, for reasons not very apparent, been merged into Gray's Inn-road.

The lane is named from the Inn; but Portpool-lane, which runs out of Gray's Inn-lane, claims a far higher antiquity than either. It is on record that more than 600 years ago there was a large pond or pool on that part of the present site of Gray's Inn, from which a ditch proceeded eastward to the River Fleet, and this pond was called the Port-pool. In 1269 one Flochkin-le-Clerk slew Stephen-le-Messer by beating him on the head with a club, in the field near the mill of Port-pool. The murderer took sanctuary in St. Andrew's Church, and there remained for three days. The result of the affair does not appear. After a lapse of nearly two centuries and a half, Edward, Lord Gray, of Wilton, conveyed to Hugh Denys, esquire, "his manor called Portpole, otherwise Gray's Inn, four messuages, four gardens, the site of a windmill, &c."

Portpool-lane, or, as it is locally termed, Purple-lane, has of late years been improving in appearance. The gigantic brewery on the north side has swept away many of the tumble-down tenements; and on the south, improved dwellings are taking the places of hovels. At the south end of Gray's Inn-lane is Fox-court, which, being a short cut from Greville-street into Holborn, is now, as it has been for many years, traversed by thousands daily. It is filled with a colony of costermongers and their barrows. The dirty, stuffed windows, and the dark doorways, seem like illustrations of the life of a poet here born. The following entry is from the Baptismal Register of St. Andrew's Church, Holborn: "January, 1696-7,—Richard, son of John Smith and Mary, in Fox-court, in Gray's Inn-lane, baptised the 18th." Mary was the Countess of Macclesfield, and the infant Richard was known in after time as Richard Savage, the sad story of whose life is so feelingly told by Dr. Samuel Johnson.

Gray's Inn-lane can boast the memories of not a few famous men. Here lived Pim and Hampden, and doubtless as they sauntered beneath the trees that shaded Gray's Inn walks, they meditated the overthrow of the tyrannical ship-money. Here lived Shirley (the mole on whose cheek so irritated Archbishop Laud), who was educated for the church, but under the influence, probably of his birth-mark, became dramatist and poet. Here John Ogilby kept a dancing-school, and perhaps by the successful tuition of his pupils in the *minuet de la cour*, or some other "high stepping," danced himself into court favour. He was a voluminous writer, as we guess, from the fact that in the hall, in Vere-street, Lincoln's Inn-fields,—Killigrew's theatre,—he held a lottery of his books, "all of his own designment and composure." Here lived Langhorne, the most pensive of poets, whose works, like those of Ogilby, are almost forgotten. Langhorne loved Burton ale, not wisely, but too well, and spent the greater part of his time in the tap of the Peacock Tavern, which still exists, but totally modernised; the last of the many houses of entertainment in the Lane, which, in the days of old, was a busy thoroughfare. Stow terms it "a fair well-filled lane leading to the fields of Highgate and Hampstead," the travellers across which halted for refreshment at the Pindar of Wakefield, or The Boot, both of which exist on their ancient sites. It was to this last-named tavern that a portion of the Gordon rioters hurried through Gray's Inn-lane to conceal their plunder. It was through this Lane that Tom Jones and Partridge came when they entered London for the first time.

And was it not along Gray's Inn-lane on many a sunny summer morning that a certain cheery, chatty old gentleman from Chancery-lane tramped gaily on his way towards Watford? And who was it that gave courteous greeting to the noble gentlemen and ladies as they passed through the gateway of the Inn "that leadeth from Gray's Inn-lane" for their promenade in the avenues so dear to the heart of Pepys? Was not Izaak Walton the one, and was not "Jacob Tonson, bookseller, in Gray's Inn-gate," the other? And may not the boy of the sleepless soul have descended from his garret in Brooke-street, and passed through Fox-court on his way to the Square of the Inn to display the fine clothes he starved himself to buy!

Much has been done for the improvement of Gray's Inn-lane, but more remains to do. The slums of Baldwin's-gardens are slowly disappearing; Brooke's-court and Brooke's market still stop the way; Verulam-street is a slur on the title of the great Chancellor; and there are several blind alleys which ought to have been swept away long ago.

With the return of spring the noise of the house-breaker will be heard in Gray's Inn-lane.

THE PUBLISHERS AND PRINTERS' CLUB-HOUSE, PARIS.

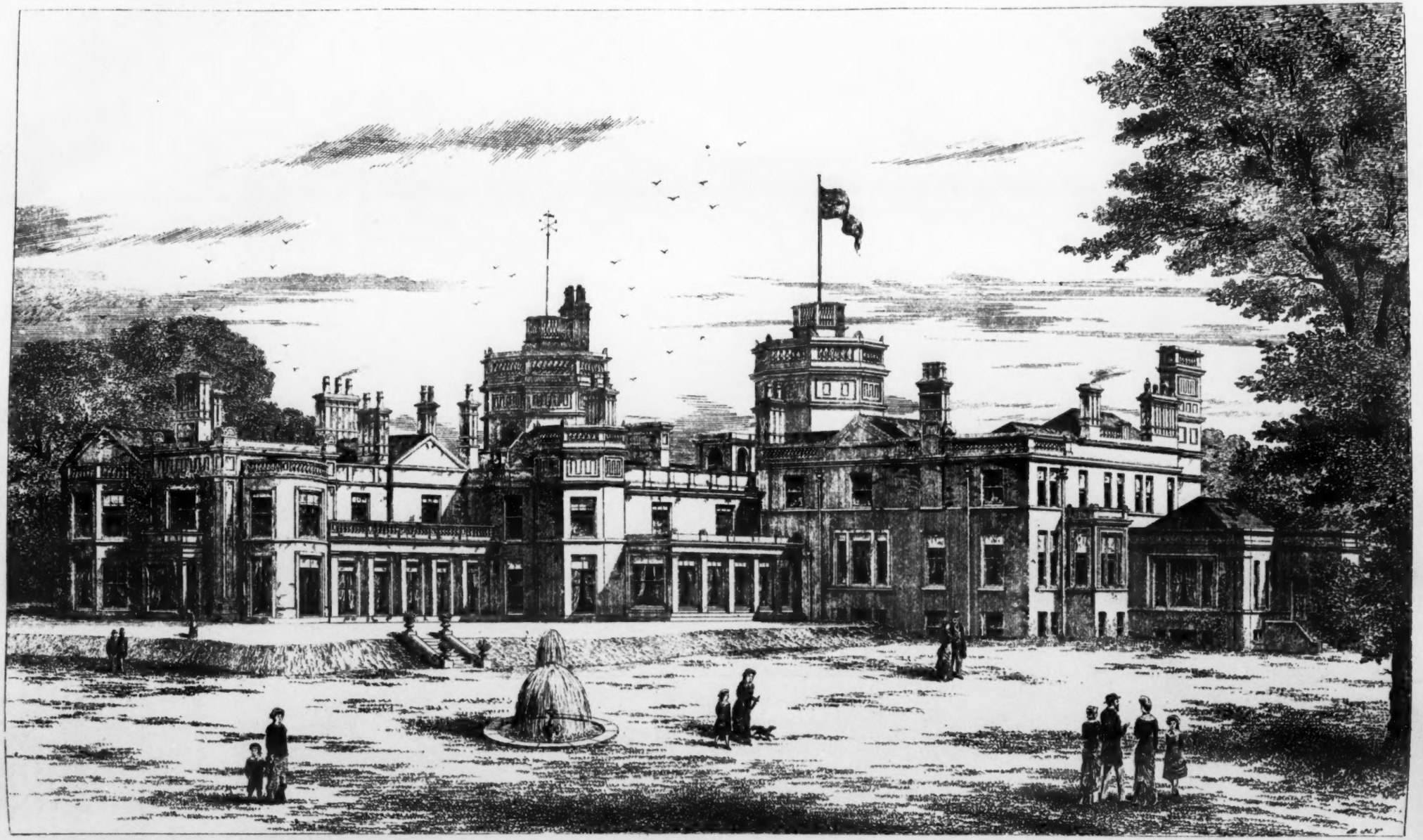
THE leading circle in Paris for everything that concerns publishing, printing, papermaking, and literature generally, the Publishers', Printers', and Papermakers' Association, known in France and elsewhere under the name of "Cercle de la Librairie," has now a club-house of its own. It may be shortly explained that the association, which was founded in 1847, had undertaken the task of guarding the interests of graphic and literary productions, and it must be said, on looking back on the activity displayed since its foundation, that the society has been successful in its object, notwithstanding the many obstacles it met with. It numbers at present 434 members. Its first president (1847-48) was the late Ambroise Firmin-Didot; its present president is M. G. Hachette.

The idea of building a club-house of its own originated in 1864, the movement being started by the then president, M. L. Hachette, and at the general meeting, held in 1865, it was resolved

THE PUBLISHERS AND PRINTERS' NEW CLUB-HOUSE, PARIS.—M. CHARLES GARNIER, ARCHITECT.

to erect the desired building. The war of 1870 completely upset the project, as it did many other useful undertakings, and it was not until 1877 that steps were taken to carry out the original project, and the construction was begun.

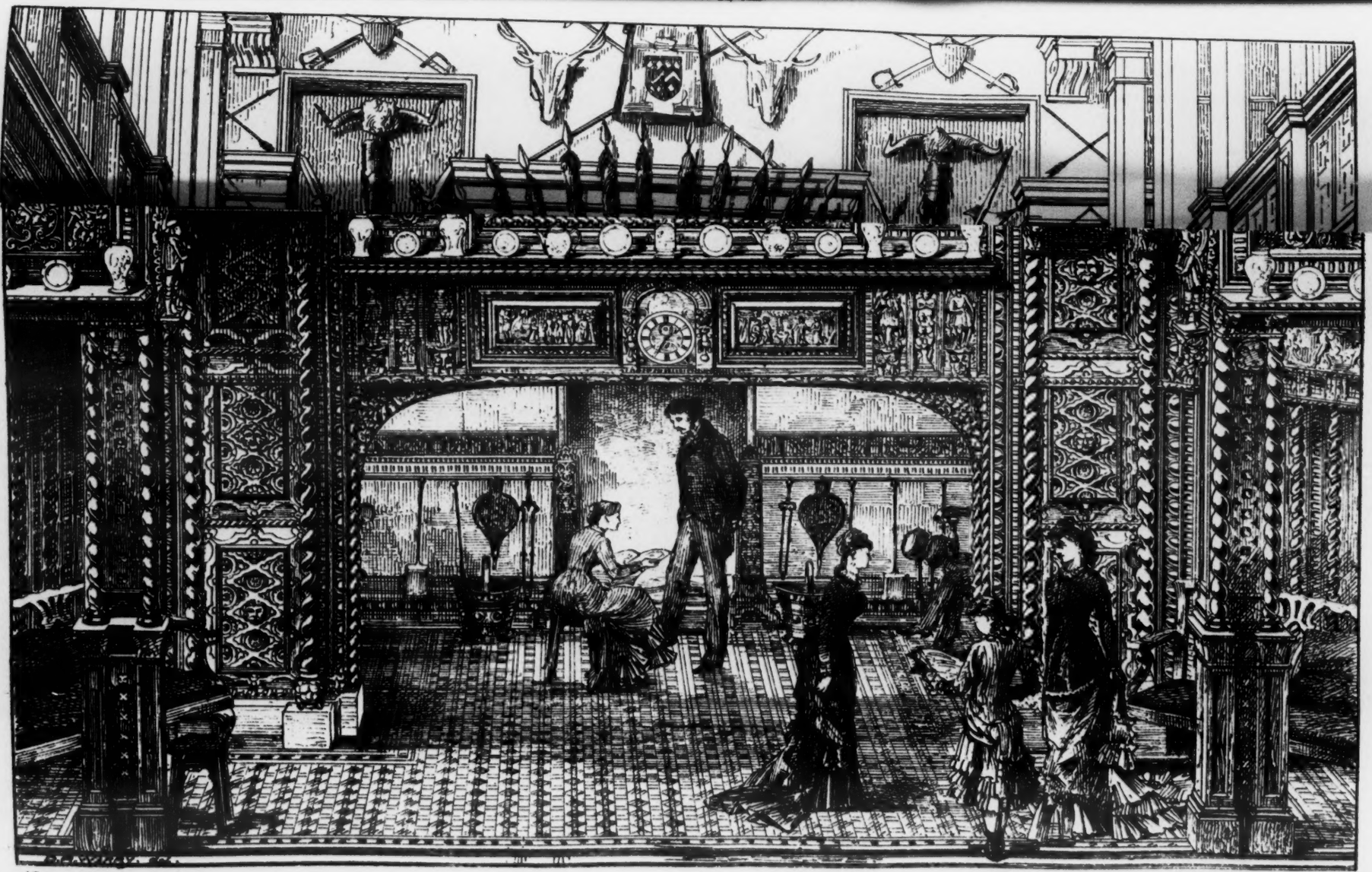
The building, of which M. Charles Garnier is the architect, is placed at the corner of the Boulevard Saint-Germain and the Rue Grégoire-de-Tours. It consists of a ground-floor (containing the library), first and second floor, and an attic story; the centre of the building terminating in a cupola; all these features combining to cause it to resemble very closely the Vaudeville Théâtre, Paris. Above the second-floor is a frieze, in mosaics, containing the names of Gutenberg, Elzevir, Didot, Montgolfier, Alde Manuce, and Senefelder. The coat of arms of the publishers, in bronze, has been placed over the principal entrance. The area covered by the building is nearly 4,000 square feet. Its cost was about 550,000 francs (22,000*l.*).



P. Lefargue, Photo-lith.

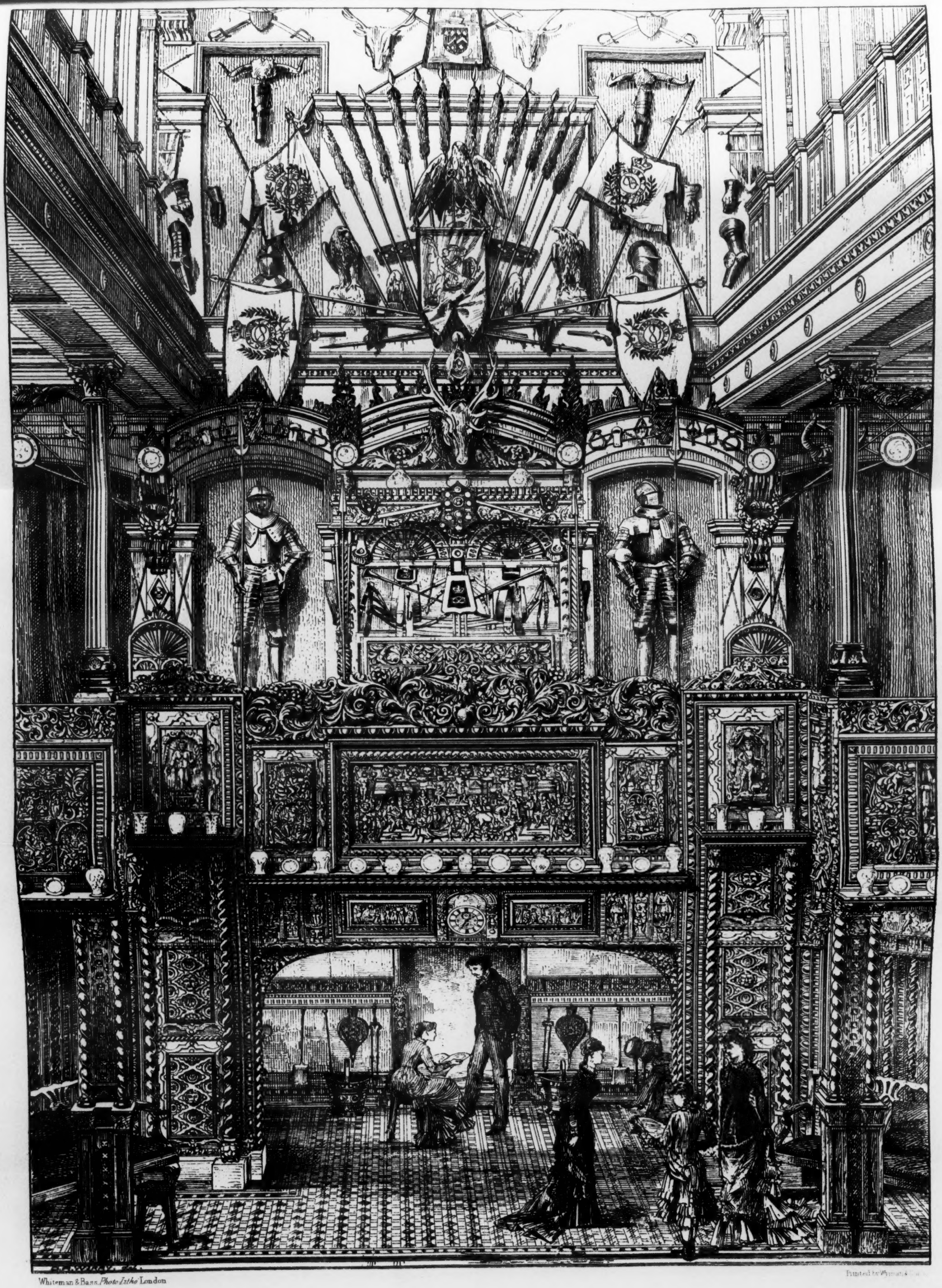
TETTENHALL, NEAR WOLVERHAMPTON.—RESIDENCE OF LIEUT.-COL. THORNEYCROFT.

Printed by Wyman & Sons.



Whiteman & Bass, *Photo. lith.* London

TETTENHALL, NEAR WOLVERHAMPTON: THE FIRE-PLACE IN THE GREAT MUSIC-ROOM.



Whiteman & Bass, *Photo-Lith'o* London

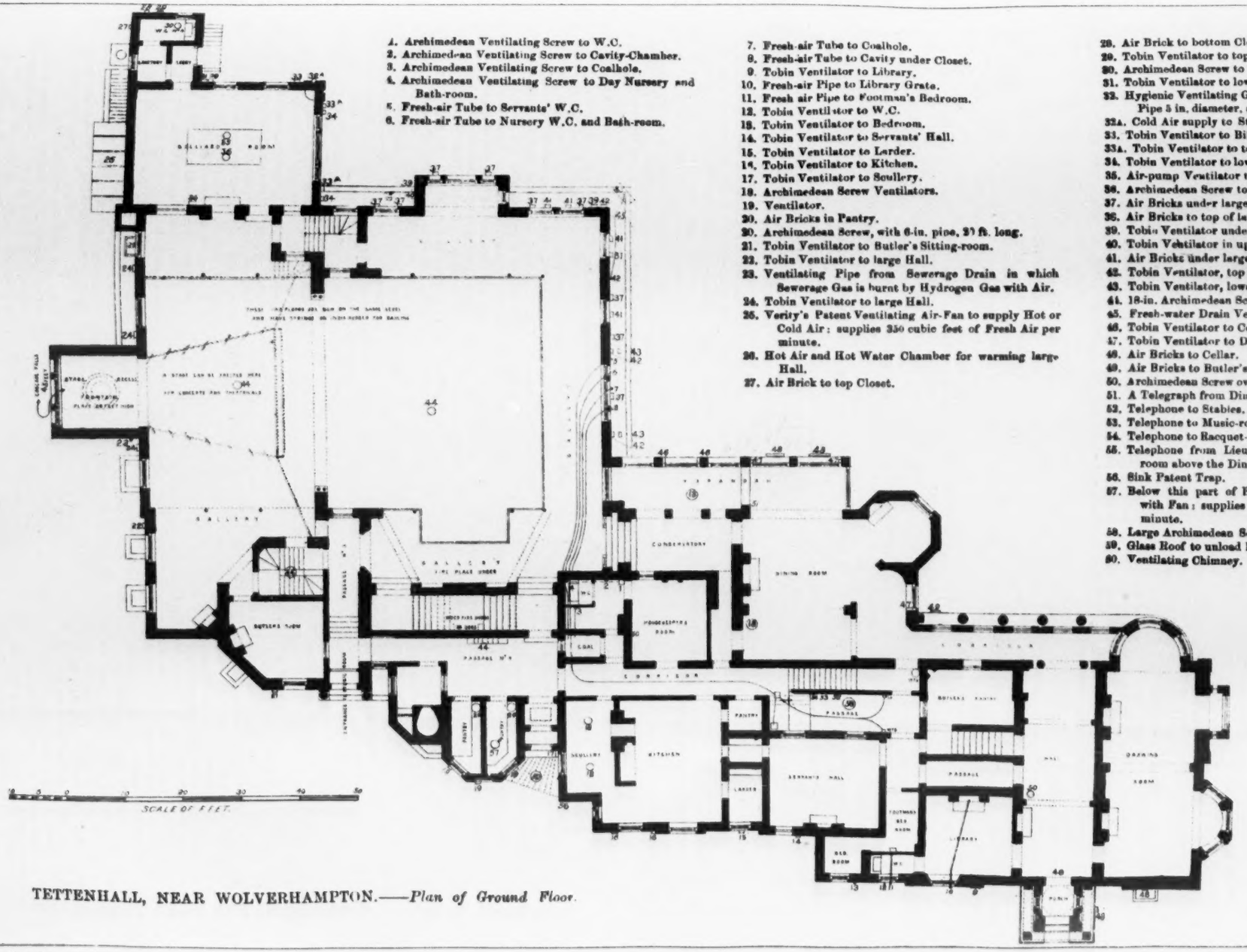
Printed by Wyman & Sons

TETTENHALL, NEAR WOLVERHAMPTON : THE FIRE-PLACE IN THE GREAT MUSIC-ROOM.

P. Lefargue, Photo-litho.

TETTENHALL, NEAR WOLVERHAMPTON.—Residence of Lieut.-Col. Thornetcroft.

Printed by Wyman & Sons.



1. Archimedean Ventilating Screw to W.C.
2. Archimedean Ventilating Screw to Cavity-Chamber.
3. Archimedean Ventilating Screw to Coalhole.
4. Archimedean Ventilating Screw to Day Nursery and Bath-room.
5. Fresh-air Tube to Servants' W.C.
6. Fresh-air Tube to Nursery W.C. and Bath-room.
7. Fresh-air Tube to Coalhole.
8. Fresh-air Tube to Cavity under Closet.
9. Tobin Ventilator to Library.
10. Fresh-air Pipe to Library Grate.
11. Fresh air Pipe to Footman's Bedroom.
12. Tobin Ventilator to W.C.
13. Tobin Ventilator to Bedroom.
14. Tobin Ventilator to Servants' Hall.
15. Tobin Ventilator to Larder.
16. Tobin Ventilator to Kitchen.
17. Tobin Ventilator to Scullery.
18. Archimedean Screw Ventilators.
19. Ventilator.
20. Air Bricks in Pantry.
20. Archimedean Screw, with 6-in. pipe, 21 ft. long.
21. Tobin Ventilator to Butler's Sitting-room.
22. Tobin Ventilator to large Hall.
23. Ventilating Pipe from Sewerage Drain in which Sewerage Gas is burnt by Hydrogen Gas with Air.
24. Tobin Ventilator to large Hall.
25. Verity's Patent Ventilating Air-Fan to supply Hot or Cold Air: supplies 350 cubic feet of Fresh Air per minute.
26. Hot Air and Hot Water Chamber for warming large Hall.
27. Air Brick to top Closet.
28. Air Brick to bottom Closet.
29. Tobin Ventilator to top Closet.
30. Archimedean Screw to top Closet.
31. Tobin Ventilator to lower Closet.
32. Hygienic Ventilating Gas or Coal Stove, with 16 ft. of Pipe 5 in. diameter, and Archimedean Screw on top.
32A. Cold Air supply to Stove.
33. Tobin Ventilator to Billiard-room.
33A. Tobin Ventilator to top of Billiard-room.
34. Tobin Ventilator to lower Billiard-room.
35. Air-pump Ventilator to top Billiard-room.
36. Archimedean Screw to top Billiard-room.
37. Air Bricks under large Hall-floor.
38. Air Bricks to top of large Hall.
39. Tobin Ventilator under Gallery of large Hall.
40. Tobin Ventilator in upper part of large Hall.
41. Air Bricks under large Hall Gallery-floor.
42. Tobin Ventilator, top of Gallery in large Hall.
43. Tobin Ventilator, lower part of large Hall.
44. 18-in. Archimedean Screw Ventilator and Lift.
45. Fresh-water Drain Ventilating Pipes.
46. Tobin Ventilator to Conservatory.
47. Tobin Ventilator to Dining-room.
48. Air Bricks to Cellar.
49. Air Bricks to Butler's Pantry.
50. Archimedean Screw over front Hall.
51. A Telegraph from Dining-room.
52. Telephone to Stables.
53. Telephone to Music-room.
54. Telephone to Racquet-court.
55. Telephone from Lieut.-Colonel Thorneycroft's Bed-room above the Dining-room to Stables.
56. Sink Patent Trap.
57. Below this part of Pantry is a patent Water-motor with Fan: supplies 300 cubic feet of Fresh Air per minute.
58. Large Archimedean Screw Ventilator in Skylight.
59. Glass Roof to unload Luggage under, or Coals.
60. Ventilating Chimney.

TETTENHALL, NEAR WOLVERHAMPTON.——*Plan of Ground Floor.*

F. Lafargue, Photo-lith.

Printed by Wyman & Sons.

THE SOCIETY OF ARTS' REPORTS ON THE EXHIBITION OF 1878, AND THE SOCIAL CONDITION OF ARTISANS.

I AM indebted to the trustworthy pages of the *Builder* for the only knowledge that I possess of the recently-published Artisan Reports of the Paris Universal Exhibition of 1878, that were produced under auspices of the Society of Arts; but I may be considered not wrong in laying before readers of the journal which is the chief disseminator of intelligence on social and sanitary as well as architectural subjects, with the editor's permission, corrections that I deem essential as regards at least what relates to important points in the condition of workingmen and their families in Paris. I claim to be allowed to know something of facts there as well as here in London, though the French knowledge be not derived from any personal experience of such recent date as 1878; and comparison of my information with what I have just now had transmitted through the *Builder*-agency makes me only despair of efforts to set forth the social aspects of a foreign country by persons not singularly gifted, painstaking, and of great experience in the observing and recording impressions derived from short visits made under many disadvantages. I may be allowed to say that once upon a time, or in effect contemporaneously with my attainment of forty years of age, when youthful aspirations were not extinct, whilst less than now checked by realities of life, and I was making my first acquaintance with the Continent, I was enthusiastic (as others had been) about possibilities of good to be effected through that intercourse of peoples which Great Exhibitions were intended to promote. Just then a residence of a year and a half in France disclosed to me the fact of the real need that there was of removal of a large amount of misapprehension on the part of Englishmen and of Frenchmen, each, about the people of the other country,—a fact whereof there will be sufficient confirmation in the minds of all who remember those impressions of England that were recorded during the Exhibition of 1862 by M. Assolant and others. In short, that which always happens is something like what is presented in the old story. The distinguished foreigner, descending at, let us say, the Charing-cross Hotel, and shown to his room by a young woman with red hair, has been in the habit of straightway noting that English women have usually red hair; and the British artisan in Paris, who could bring back information of as much value to himself for his home-economy as for his craft and calling, seems little more to be depended upon abroad than the foreigner in England, and to fall into as many errors of omission or commission. How to observe and to record, indeed, are arts almost the last that are to be learned, and whereanent a man need be conscientious, as well as acute, beyond the qualification of such men as (be it said without the smallest offence) the majority of even picked artisans. I remember that during the time of my residence in Paris articles appeared in the *Builder*, wherein would be found statements, every line of which I could substantiate, that are at variance with those of the present Reports. Subsequently, an intimate connexion with the work of the Working Men's Club and Institute Union led to my being freshly interested in questions of social and educational importance, and afforded opportunities of turning results of foreign observation to account. On the occasion of one of the annual conferences of the Union, the question of refreshments in clubs was consigned to me by the Council; on another occasion the subject of beverages, so important in connexion with temperance, was practically treated at my suggestion; and though little way has since been made by the Union on the planned lines, I am able to recognise in the popular coffee-tavern movement and otherwise, and in the very fact of the attention now given to the social condition of French artisans, operation of influences that might be productive of immense benefit in this country.

As for the coffee-tavern matter, the chief point now needing attention is quality of the article supplied, much having yet to be done ere the coffee will be either "as in France," or greatly operative in diminishing the taste for intoxicating drinks. As for the domestic life generally of the French, seemingly occupying such important space in the Reports, it is essential that errors that have been just now made be promptly corrected, and for that end there is no better medium than the *Builder*.

I presume there is nothing wherein admittedly the English artisan can with greater advantage study the mode of life of his foreign brother than as regards the thrift and the comparative temperance of the latter. But were the truth what seems stated in one of the Reports, that the French artisan and his wife ordinarily dine at the *café*, and afterwards go on an evening's amusement, leaving their children to the care of "the woman of the house,"—a personage impossible of identification by any one acquainted with Paris,—there would be that way nothing of the nature of thrift deserving the imitation of the Englishman. One might as well say because Gatti's place near St. Martin's-in-the-Fields is crowded every night, and because a workingman can be sometimes seen there, or even at one of Spiers & Pond's refreshment-bars, that such places are ordinarily resorted to by English working-men for their common meals. In fact, there are quite as many points of resemblance as of difference between the people of the two countries. Even as for the home-comfort, it is simply a gigantic error to assume that the thing is not appreciated by the Frenchman. The truth was pointed out in the course of the *Builder* articles on Paris, which had high encomium from M. César Daly in the pages of the *Revue de l'Architecture;* and it is not affected by the curious circumstance that the most persistent asseverations about the idea of home being peculiar to England, and opposed to French notions, are made by the French themselves. It is most important that the ordinary ichnographic arrangement of a Parisian *appartement*, even of the poorest class, be apprehended; since much of the thrift of the Frenchman is made possible by the place wherein he resides, along with the character of his food, and the facility with which he can have it for cooking. Therefore, any reports for the benefit of English artisans that said nothing about French cooking, Paris markets, and the plans of *appartements*, would fail, as these Reports fail, to give the very points that the English artisan most stands in need of example anent. The Society of Arts' Reports appear to have nothing on the heads mentioned unless in saying much that is opposed to facts. Thus, because men can be seen, sometimes in working-dress, or even a whole family, seated in a Paris *café* or *café-restaurant*, it seems to have been concluded by the reporter that the daily dinner is procured and eaten in such costly places, instead of being prepared and eaten at home. The truth is much more deducible, if not directly procurable, from the excellent paper read by the present Secretary of the Institute of British Architects.* What was therein treated was the domiciliary condition of the upper classes; but the circumstances of all classes in Paris are much the same in regard to the living in "flats," the vicinity of markets, the utilisation of vegetables, and the possession of cheap appliances for methods of cooking, wherein the most economic diet can be resorted to. Therefore all such matters were well deserving the attention of the deputed reporters on the general social condition of French artisans, and the recent prominent notice of M. Leclaire, amongst others, in the *Builder*, more directly relates to the higher crafts.

Just as the English working-man, amongst others, will take his wife to Gatti's once and again for a change of scene, the Frenchman does the like; but for the couple to dine at such a place daily would be far too expensive. It is cheaper in either country to dine at home; and the grand point for notice is, that the perfection of the French arrangements of home, and of food-supply, and the cooking, all combine to render anything else needless. The sooner facts are understood, and the French example be followed, the better will it be for the Englishman, and not alone him of the working-class. As some evidence of foundation for my allegations, I may mention what was once said to me in Paris by a highly-intelligent man, during the very time of asserted prevalence of evils from expropriation of the industrious classes. He was a compositor in a leading office, whereof the name of the firm must be well-known to architectural readers. We were travelling in an omnibus, costing each of us very few sous for a long journey to a suburban quarter. Observing to him that provision of places of residence in the outskirts of Paris served by direct and cheap modes of transit must involve advantage to the working-classes, no longer condemned to reside in unhealthy as well as expensively-rented central quarters, his reply was that, attaching all importance to my sanitary argument, and to others put forth by the municipality, there was the objection, which he deemed fatal, that still slightly-increased distance, with actual cost of transit, was operative in precluding the taking of the meals at home, and so family-life in cases of the expropriated artisans was impaired. My idea was, and still is, that much of that real objection to suburban residence of artisans might be got over for London by improved routes, and railway and tramway communications, and especially were the original Parisian idea of establishing the chief manufactories in suburban localities, so that the places of abode might be near them, largely resorted to. Such suburban location of manufactories, to the necessity of which I have frequently called attention, is one of the essentials of London dwellings-improvement, and whereof the necessity is not to be much diminished by that improvement in railway communication which consists in the formation of an added branch to the District Railway, often greatly consumptive of time, or by any reduction of fares for trains at certain hours. One night, when, in a discussion after a paper by Mr. Gatliff, at the Statistical Society, I had put forth my view about the suburban location of manufactories, Mr. H. D. Pochin enforced it by some cogent arguments, urging that in, for example, the manufacture of a hat, there must be less cost in the transport of the material once, and of the manufactured article, than in the day-by-day conveyance of the workman. In short, for the advantageous domiciliary condition of the artisan, and whilst repairing-places in London, as well as certain larger manufactories, could never be dispensed with, it is essential that the suburbs be utilised, as they are not now, unless in very exceptional cases, such as that of Messrs. Letts's place at New Cross, and the establishment of Mr. Stanley, the instrument-maker, at South Norwood. Oppidan London should become, as regards merchandise, chiefly a mart; and a centre of communication, all resources of the postal service, of railways and tramways, and of cheap telegraphy, being turned to account to the end of diminution of inconvenience inevitable. As much as anything the police of the suburbs must be more studied than it is; and doubtless much else will have to be done to redress a balance between town and country; but there is more to be gained than what is to be lost by proper utilisation of suburban sites.

The work generally to be done in London dwelling provision is both considerable and varied; for it belongs to the duties of legislature and government, of municipalities, land and building owners, architects and builders, sanitary inspectors, and, if last named by no means least, actual and would-be house-occupants themselves. And, be it observed, whilst attaching immense value to the sort of professional work wherein the late Mr. Henry Roberts was a most important pioneer, there cannot be too much said in urging the necessity of attention to such views as were put forth by that philanthropic individual in his pamphlet on "Home Reform," concerning duties of house-occupants themselves. To allude to these is not to absolve landlords and legislators; and Mr. Cross has perhaps by this time learned the applicability of the well-worn if very vulgar saying about the impossibility of cramming a quart into a pint-pot. I once got much abuse from a section of the Conservative press, wherein, I may mention by the way, I

* "Middle-Class Houses in Paris and Central London," a paper read at the Royal Institute of British Architects, by William H. White, whereof a lengthy report can be found in the *Builder*, vol. XXXV., 1877, pp. 1166-70. The author, however, appeared to fall into one slight mistake, whereof the correction is of some importance with reference to the aims of this present communication. He seemed to assume that there was little or no association between the *locataires* of the same building in Paris, an impression which might indeed be conveyed by a portion of one of the *Builder* articles, wherein reference is made to a passage in Bulwer's "Night and Morning." The truth is, the use of the same staircase leads to sufficient acquaintance between the parties to tend even to the nearest unions, as any one looking at the official announcements of marriages may see in a moment, and where the residences of the parties are given, in the majority of cases, as *même maison*. I was greatly struck by that at the very time of the appearance of the *Builder* article; and the explanation given to me by a French lady was, that it must be supposed that the parties had been residents in the same house. Mr. Blanchard Jerrold subsequently drew attention to this feature of French life. But the truth is, the mere passing one another on the stairs, by the *locataires*, with the invariable politeness, and the little attentions that are allowed, would explain how acquaintances might be commenced, and might ultimately grow to matrimonial unions, even in France, in classes below the highest.

was misreported, because, as a member of the ill-managed if not aimless deputation from the Artisans' Institute, I had told Mr. Cross what appeared to me tendencies of that part of his measure which seemed to contemplate improvement of thoroughfares, provision of new places of abode, and re-housing inhabitants of a locality, all as contemporary operations, and to be accomplished without even temporary reduction of buildings-occupied ground.

Whoever wants to see the condition of the English artisan raised, generally, and diminution made in the prevalent extravagance as well as the intemperance,—albeit which latter it is a libel on the class to attribute to artisans alone,—should begin by recognising the intimacy of the relation that there is between the formation of certain habits and the lack of home-comfort. I myself believe that the true solution of the liquor-question,—which question I take to be the mode of extinguishing intemperance,—would be found in the supply of food. Recognition of the importance of that should not preclude appreciation for similar objects of other matters than mere planning connected with domestic comfort; but the whole of that argument will be found to involve provision of properly-planned places of residence. These exist in Paris, but are not to be found in and about London, unless in the buildings erected of recent years, or that are being supplied only in numbers far below the requirements of each class of inhabitants. Mr. White, and at various times the *Builder*, have made tolerably clear the magnitude of the requirement, which, as things at present are, is left to be met by the combined and yet all-inadequate agency of would-be occupants' demand, and philanthropic societies' and speculating builders' supply; but too little attention is given to the blundering that is in actual perpetration after years' admission of some of the facts of evils occasioned by badly-planned dwellings. In quite recent years large additions have been made to the house-provision of Southern London, as close to the Brixton Station; and where houses of two stories have been built, such as are invariably occupied by at least two families, the planning is only such as will provide for the occupation of one family, supposing it to absorb the house. There is but one cooking-place, with, of course, one water-supply and sink. Clearly, there ought to have been, besides two outer doors, provision for two families' dinners to be cooked and eaten at one time, involving two ovens and two washing-up and refuse-ejecting places. Adequacy of the total water-supply, good sewerage and house-drainage, or adapted for the requirements of the largest number of occupants, are points whereof the importance need not be alluded to,—much requires yet to be done under these latter heads, wherewith the duties of Local Boards are concerned; but exercise of moderate intelligence in internal planning is as "conspicuous by its absence" as it was; and the speculative builder is still at this late day much more likely to provide a marble chimney-piece to a room that will not be used as a drawing-room, than to provide an oven and a separate sink for the needs of a woman wanting day after day to prepare her husband's food. In one short street, and probably several streets, close to the Brixton station, in the severe winter of 1878, nearly every house was for days without water because of the frost and the burst pipes. One good woman was obliged to forego lighting a kitchen fire for her Christmas dinner, as she could put no water into the boiler at the back of the grate. It happened that by the kindness of neighbours, and plenty of running to and fro with small jugs, she had enough water for common purposes, and that she did not need water from the boiler; but she wanted to roast some beef; and the end of the position was, that lest she should spoil the boiler by lighting the fire without water in the boiler, the meat had to be roasted in the bed-room. Such are amenities of London home-life. Can it be wondered at that the bread-winner of such a household as that which is shadowed forth, bound to observe early and regular hours at a place of business far distant from his abode, is almost driven to seek something that may seem a substitute for food, or if at best he has to get much of his food expensively where he has not the comfort, more than the economy, of a home presided over by a well-managing wife? The refreshment-bars that have become a feature of the London of the present day are indicative of the want, which they do not supply, of adequate house and home accomodation. If it be true, as stated in some newspapers, that the licensed *victuallers* are about to justify their designation by "going in" more largely for the supply of food, there is no need for anything but popular satisfaction thereat. But nothing that recognises a practice of the getting of *déjeûner* and dinner away from home ought to be satisfactory to those who would promote the growth of the domestic virtues, and of other things, including thrift, and, probably, temperance. There might be no harm in husband and wife going to some place out of doors for their ordinary meals; only they cannot do that economically in either country, even given the advantage that Paris has in the peculiar cheap establishment called *crémerie*, which truly becomes often a species of *café-restaurant*. The habitual use of such places, even in Paris, can be consistent with economy only in those very exceptional cases where husband and wife work in one locality and have to keep the same hours, and where time expended in purchasing and cooking food costs more than the *restaurateur's* imbursement and profit. As may have been seen, I should expect to find that the most economically managed as well as comfortable Parisian artisan-households are those where the man is married or has a housekeeper.

During much of the time when I resided in Paris, being in Paris I found no difficulty in providing and cooking my own *déjeûner*, so that I resorted to the neighbouring *café* chiefly for the sake of newspapers. As for dining, I had experience of each of the possible arrangements for the provision of that item: 1, the home-cookery, of which, by a special arrangement with a friend, I was able to have the advantage; 2, the *restaurant*; and 3, the *table d'hôte*. The first of these, for ordinary use, was, at all events, the most economic, besides, obviously, the suitable thing for a family man, which I was not, or a bachelor with limited means, able to do something for himself. I had three small rooms, and adjuncts of the *suite*, in the Rue de Sèvres, where there was a market extending the length of the street. My *suite* was not so well planned as are many of the lately-provided places in London; and all water for use had to be carried from the court below. This labour the *concierge* managed for me for a very small consideration, to my perfect satisfaction, and, contrarily to common English assertions, without any complaint on the score of my profuse use of an Englishman's requisites. Probably he got rid of slops, in my absence, by the help of the *plomb*, the sort of sink outside a staircase-window, which was once mentioned in the *Builder* as a contrivance suggesting something to English builders, superior to the housemaid's sink, but seems not to have been instituted. My rooms would have sufficed for my wife, and even a child, had I not been a bachelor. As it was, by help of the *concierge* periodically remunerated with a most moderate douceur, and reasonably expectant of a trifle on the *jour de l'an*, and at insignificant personal trouble and an expenditure not above that allowable for a poor man, I get on well enough in summer-time. I took the place, just as it had been vacated by a lady gone to Vichy, and who was glad to have some one in it during her absence; so that I found in it all needful appliances. I had only to get in a little charcoal, and to descend into the street of a morning to bring in from the market therein, or from the shop of the *épicier* or other dealer, such butter, eggs, bread, coffee, sugar, and milk, as I wanted for early breakfast. The distinctive feature is of each of my Parisian residences was that my rooms were completely shut in by an outer door from the staircase. At the Rue de Sèvres the passage from the outer door of my *suite* came through a lobby-space, whereto were appended a closet, used as a pantry or food and crockery store, and also a space whereof the chief feature was something like a blacksmith's forge in outer appearance, whereon I found a charcoal-stove about the shape and size of my hat, a frying-pan, a pair of bellows, and a box of matches. It was the easiest work in the world to get up sufficient fire for the preparation of coffee and omelette, and, with the help of grapes or other fruit from the markets, and cheese occasionally, I fared even sumptuously till lunch-time, as I cannot at greater cost in London. Going out, the *concierge* took my key, and in my absence he emptied slops, swept the rooms, made beds, and brought fresh water. Disadvantages to the place were the absence of a tap for the supply of water within the *appartement* itself, the arrangement of the windows always on one side of the line of three rooms, and their being overlooked by those of my next neighbour's *appartement* on the return side of the court, or when my curtains were not drawn; and lastly, since the whole truth should be told, the vicinage to the door of my *appartement* of the door of the chief *cabinet d'aisance* of the building, a place which, as usual, the French men and women did not know how to use properly. Neither the actual water-supply nor the arrangement for the removal of liquid refuse involved any inconvenience practically, whilst the latter had, indeed, advantages over the London system of carrying a slop-pail through the kitchen occupied by the ground-floor, during their breakfast or dinner time. All that was defective as regards the *cabinet* need not have been, and probably does not exist in lately-built Parisian dwellings. The distinctive merits of the place, including what may be called the ichnography, were, first, the outer enclosing door of the suite, and second, the kitchen and appliances adapted to humble wants, well served by the neighbouring market, and the cooking on the French system. I have had capital dinners prepared with no better apparatus than the small charcoal-stove, and some help from the *rôtisseur*, the *charcutier*, the *confiseur*, and the *fruitier* of the adjacent establishments when, in deference to ideas of my wants, particular features, say, of an English dinner were thought to be required.

In Paris the family home is no less the centre of domesticity than it is supposed to be in London; whilst it is the focus of thrift. Everything connected with it, therefore, deserved notice, and to be accurately reported upon.

The food question is greatly made up of,—1. The provision of markets, where with are connected both an extension of the knowledge of available resources, as under the head of esculent vegetables, whereof there are many kinds that do not seem to be known in this country, and an alteration, by co-operation or otherwise, to the mechanism whereby at present the consumer does not get fresh vegetables, and has to pay the enormous addition to the cost accrued during the passage from Covent Garden or the Borough Market through the hands of the retailer; and 2. Modified dietary and cooking, along with the provision of appliances therefor.

There can be little use in the provision of what may be called the raw material, as long as the appliances, whereof the more important are those which have to be provided in the planning of the tenement, are deficient.

It may be hoped that the lately-terminated Croydon Congress of the Sanitary Institute will have such influence on the authorities of one side of London as will produce alteration in the system whereon certain branches of the sanitary operations are conducted, and at length justify the claims put forth on behalf of the Surrey town. But, at present, one branch of the sanitary business, at least,—the inspection of nuisances by the Croydon officials,—is singularly inefficient. In one locality near the Crystal Palace, not only are inconveniences in frosty weather painfully felt, but cisterns are left without covers, whereby such water as there is is apt to become abounding in animal life; whilst, if a closet be stopped, as such a place is apt to be from the habits of the badly-behaved children of the neighbourhood, it will remain in the same imperfect state. The inspector having had his attention called to the matter, may require certain things to be done, but does not always see that they are done. As for the water-supply, the turncock men are completely independent; and one of them has been known to make difficulties about turning on the water at a reasonably early hour in the morning: the inhabitants are therefore remarkable for dirtiness as well as intemperance.

Not having seen the Reports themselves, which are not even published in the Journal of the Society, I do not know whether that on the building trades contains anything about painters' work, and the use of zinc-white. I must suppose that had there been such mention, I should have seen reference to the matter in the *Builder*, as lately, when an interesting notice appeared of the biography of the late M. Leclaire. Like the *Builder*, I had previously made so many efforts, as in connexion with the Artisans' Institute, to extend the knowledge of M. Leclaire's good works in connexion with the improvement of relations generally between masters and men, providence amongst workmen, and technical education, that some of those who visited Paris cannot, I should suppose, have been ignorant as well of what had been gathered, as of what remained to be learned, especially as to the particular painting-process

that had been found to preclude such disadvantageous results as had been commonly said to be attendant in England on the use of zinc-white. As to these, I may mention that almost every English master-painter and workman with whom I had spoken had condemned the vehicle. Mr. Crace, for example, had tried it, with an anxious desire to bring it into use, but was compelled to abandon the attempt. When I was in Paris in 1867, having had the pleasure of attending at the opening of the session of M. Leclaire's classes, just before saying good night, I asked the question of M. Leclaire and his foreman whether the white of zinc was still in common use, and stated what had been said to me in England about its disadvantages. There was a general smile on the part of those surrounding me, which was not lessened when I pointed to a bit of something, and asked if it were zinc or lead white, and whether there were any of the latter on the premises.

This as a very slight addition to the biography of M. Leclaire, may help to show that there were matters strictly connected with the building crafts quite deserving to be reported on; and though much had been said about M. Leclaire's establishment by John Stuart Mill, by myself, by the *Builder*, and by Mr. Hodgson Pratt, there was room for more and recent information from workmen themselves. M. Leclaire, at the time of my visit in 1867, was contributing to the settlement of some of the most important objects:—1. Improved relations between masters and men; 2. Improvement of house-painting processes, such as what involved use of white of zinc; 3. Extinction of frauds in painter's work; 4. Thrift and prudence, as in the insurance against poverty, old age, and sickness; 5. Education, general and technical; and lastly, the better relations between different classes of society.

Altogether, there was very much outside the Exhibition, both socially and technically, for the reporters to look into; and I am only constrained to apprehend from the specimen of the results that the value of the Reports is below that of the Reports on the 1867 Exhibition, which helped to show the English that in some matters of art and handicraft they were nowhere, and to correct the deficiency in a manner without attracting some attention of the French.

EDWARD HALL.

*** This communication has an interest of a melancholy kind. The writer, in times gone by, was a regular and valued contributor to our pages; but for a number of years his connexion with it had entirely ceased. On Wednesday in last week we received the above from him with a list of minute conditions under which it was to be accepted. On the following Saturday we wrote expressing our willingness to meet his views; but this letter did not reach him. He had died suddenly at his lodgings in Sydenham on the intermediate Thursday. We have complied with his last wish by printing the paper.

Mr. Edward Hall, whose name is known to many readers, served his time as an architect with the late Mr. Atkinson, of Manchester. Coming to London soon after, he attached himself to the press, and for some years wrote continuously. He received a medal from the Institute of Architects in 1838 for an "Essay on the peculiar Characteristics which distinguish Roman from Greek Architecture"; and a second, in 1841, for an "Essay on Iron Roofs." He became a Fellow of the Society of Antiquaries in 1847. More lately he had devoted a considerable amount of time to the business of the Workmen's Club and Institute Union, accompanying bodies of artisans on various occasions to ancient monuments, and to large works in progress, and giving them information on the subject. At the time of Mr. Hall's death he was connected, we believe, with the Channel Tunnel Company.

Storage of the Electric Fluid.—Professors Houston and Thomson, of the Franklin Institute, report that they have invented a method of storing up the electric fluid. The fluid is stored in a vessel containing a saturated solution of zinc sulphate; containing also a copper-plate in connexion with an insulated wire. It is said to be capable of being charged with any quantity of the electric fluid. The invention is said to be a very important one, both in regard to telegraphic operations, and also as being applicable to the use of the electric light for domestic purposes.

HINTS FOR THE AUTHORITIES OF THE BRITISH MUSEUM AND NATIONAL GALLERY.

THE British Museum is such a world-renowned institution that every Englishman should be jealous lest anything, however small, should lessen its reputation, and there are one or two apparently small but by no means unimportant points in regard to the management of this institution, as well as to that of the National Gallery, which require some notice from those who are unconnected with these collections, except in the sense that as they are the property of every Englishman, every dweller in these islands has an interest in their proper management. The first point to be touched on is in connexion with the guide-books to the Museum. We are now in the year of grace 1880, but many of our readers will probably be a good deal astonished to hear that the guide to the Bronze-room is dated 1871. If no changes had been made or fresh works added to the collection in this room, of course, this would not be any valid charge against the management of this institution. But, so far from this being the case, there have been important changes and additions. For example, the magnificent bronze head of Artemis, or Aphrodite, which is placed in the centre of the room, on a pedestal by itself, is not in the catalogue at all, and is not numbered or lettered in any way. Then, too, as to changes, "Cases 5 to 11," says the guide, "contain a number of bronzes," and then follow five pages of descriptions of these cases; but, as a matter of fact, they now hold specimens of antique shields and jugs, and the bronzes are scattered about the room, in very different places. Among these, for instance, is the Apollo which is sometimes ascribed to Kanachos, but which, whoever created it, or of whatever work it may be a copy, is one which forms an admirable specimen of the more ancient styles of sculpture, and is consequently of great value to the student for purposes of comparison with later and less archaic studies of the same deity. Now, however, this Apollo has its home in Case B. These bronzes are, we need hardly say, of immense value to any one who desires to make an intelligent study of Grecian sculpture, and to the ordinary visitor even, who wishes to obtain a slight idea of the different characteristics of antique workmanship. Therefore it is the more necessary that a guide to them should be at once accurate and plain. The number of works of art in the room, too, is by no means so large as to make it impossible very soon after changes in their distribution to issue a revised guide, and considering that the present book is only a small octavo of fifty-seven pages, the public have undoubtedly fair grounds of complaint in regard to its present useless state. Moreover, let it be remembered, no reduction is made in its price, nor is any intimation given to the visitor that it is imperfect. It is quite true that in the general guide to the departments of natural history and antiquities, the bronze-room as now arranged is briefly mentioned, but why natural history should be combined in the same volume with antique bronzes, it is difficult to understand. People who go to look at elephants hardly care to study heads of Grecian deities. And this same criticism applies with equal force to the joinder of the Elgin-room with these general collections of birds and fishes. There is no special guide to the treasures contained in the Mausoleum, the Hellenic, or the Elgin-rooms, which seems to us a strange and most unaccountable neglect. Therefore, it is impossible, with accuracy, to follow the different works exhibited in the Hellenic room, which is put aside with a page and a half of description. Compare this state of things with the admirable guides to the sculpture in the Glyptothek at Munich, and it must be confessed we have reason to feel ashamed of ourselves in this particular. And when we mention foreign collections, another point is brought forward upon which some words must be said, which apply even more strongly to the National Gallery than the British Museum. Why do we carry our insularity to such a pitch that we do not provide handbooks in their own languages for our French and German visitors? Again, to quote the instance of the well-known collections at Munich, both French and English, as well as German guides can there be obtained. We will not say much for the character of the English, but as most travellers know, or ought to know, French, this does not much matter. But, at any rate, here are we in wealthy England far behind a small country like Bavaria in consideration for our foreign guests. If German guides to the British Museum and the National Gallery are not sold, at any rate a certain number in French should be provided; but we have no hesitation in saying that the guides should be printed in both French and German. And the same remarks apply to the outside notices relating to the days of opening, and so forth. In any foreign town of importance these notices are written in three languages, and why should we English be an exception to this proper and hospitable rule? In regard to the British Museum, there can be no doubt, also, that Saturday is a most inconvenient day for it to be opened two hours later than usual. If the officials have a morning half-holiday, or there be extra cleanings, let them take place on one of the days when the Museum is partially closed to the public. Saturday mornings are often an open time to many, and it is inconvenient to the public to find the gates closed against them, and no place of shelter at hand. The fact that the National Gallery is closed all October as well as in the two preceding months is a still greater blunder; but this part of the subject has been so frequently touched on in other journals that it is sufficient here to express our regret that the authorities have not yet made some changes in regard to it.

THE CHURCHES OF SOUL BAY.

ARCHITECTURAL ASSOCIATION.

AT the meeting of this Association on the 16th inst., Messrs. A. E. Dixon, J. D. Butler, E. A. Jackson, W. T. Walker, and J. Windsor were elected members.

It was announced that at the special meeting held to consider the alteration in Rule I. (see p. 49, *ante*), the proposed change was adopted, with the substitution of the words "carried on" for the word "established."

Mr. Basil Champneys then read a paper on "The Churches of Soul Bay." We extract the following passages:—

Imagine yourself to be standing immediately to the south-west of Southwold, on the edge of the common, at the top of gently rising ground. To the left is the sea, stretching along the curving and level line of the bay (called Soul bay, no doubt an abbreviation of Southwold Bay), until some five miles off, as the crow flies, it rises rather abruptly into a cliff, on which stands, bare and gaunt, a tower and some remains of a nave and chancel. Even from this distance the broken lines tell you that this is and has been for many years a hopeless ruin. It is, in fact, all that remains of Dunwich, once the most important town in this part of England (except for the still more mutilated remains of the "Grey Friars," which cannot be seen from this distance). About a mile from where you stand is the mouth of the river, marked by a pier on either side, built in timber, on the farther side of which are a few fishermen's huts, skeletons of boats, and other gear of the boat-building trade. Before you, as far as the eye can follow, it reaches the tidal river, forming the haven of the bay, and marked here and there by a quay, or by a large boat standing out for repair. Immediately in front, the small village of Walberswick, its few houses set at random, clusters near the river, and straggles off towards the right, dwindling as it recedes, until, a little beyond the last house, rises an imposing church-tower, supported by a partly-ruined nave, aisle, and chancel. Further off, towards the right, along the course of the river, a line of fir woods leads up to a distant tower, round which are gathered some red roofs of cottages. This is Blitheborough, one of the most remarkable churches of this part of the country. Then, further to the right, you may just see what seems to be a low square tower rising from among the trees. This is Wangford. And still further in the same direction is Reydon. If you turn right round, you get a good view of Southwold Church, the only one of all these which has any of its former splendour.

Owing to the low and even level of the general landscape, a glance makes it possible to take note of every feature of interest within a radius of some ten miles. One monument only within distance lies to the north, and this is not visible from Southwold. Of the churches enumerated, I propose to omit Wangford only, for a very simple reason. I saw enough of it in

passing to convince me that it had been too much restored to possess any interest for me; and I would remark in passing that I should like to ask the advocates of wholesale restoration,—such of them as retain any taste for archæological research,—whether they ever feel inclined to step out of their way to examine a church which they are told was "thoroughly restored a few years back." I venture to assert that the majority of them, from an instinctive anticipation of disappointment and puzzledom, pass these by in favour of others which still "sadly need the hand of the restorer."

I shall commence with Dunwich, as the oldest and fortunately the most important of all these places. First of all we will see what we can find there, and will then consult Mr. Gardner as to what was to be found there formerly. The gaunt ruin which we saw in the distance proves, on close inspection to be a church, consisting of a nave and chancel, with the arcade which opens into a north aisle now destroyed; the whole was roofed, the arcade kept standing by brick buttresses, the tower fairly complete but for the loss of some of its angle pinnacles and the tracery of its windows. This was the Church of All Saints, which had the good fortune to be furthest inland of all the (according to Mr. Gardner) fifty-two churches, chapels, &c., of Dunwich. Even as it is, it risks even such ruinous existence as it retains. The sea has eaten away the cliff to within some 50 ft., and has swallowed a large portion of the churchyard and them that dwelt therein. If you examine the face of the cliff at about 3 ft. to 4 ft. below the ground level you will find a stratum of bones, many protruding from the cliff. It is noticeable, too, that the later interments (the last that I noticed bore a date of about 1820) are at the very landmost angle of the churchyard, the occupants having evidently anticipated that their turn, too, would come. Immediately to the west of the church is a large enclosure, the walls of which show, here and there, evidences of Mediæval workmanship. On the west side of the walls is a large, simple, and effectively-designed double gateway of the fifteenth century, which was the main entrance to the grounds of the Grey Friars. In the centre of the inclosure stands some fragments of the conventual buildings, which, by a later conversion into a town-hall, have lost nearly all evidence of date and design. A portion of a traceried head of a window alone remains to assign this to the fifteenth century, and to establish its connexion in date and character with the ancient gateway. To return to the church. It must have been originally founded in the twelfth century. Some remains of this date are built up in the south wall. In the latter part of the thirteenth century it was enlarged by the addition of a north aisle, now completely destroyed, but of which the arcade, with simple octagonal columns and simply moulded capitals, fix the date. The arches are chamfered in two orders and squinched above the cap. The chancel is probably of the twelfth century foundation, and was remodelled at the time the north aisle was added, or possibly a trifle later. The earlier part of the fifteenth century contributed the tower, and converted the south wall of the church into its own style. It probably added the porch, which has, however, entirely disappeared. This is all that remains of ancient Dunwich; but let us hear Mr. Gardner on the subject of its ancient prosperity. I will not read you Mr. Gardner's account of the part played by Dunwich in the general history of the country. Much of this is purely conjectural, much more would need careful and accurate collation, with documents to be fully accepted as history. Before the reign of Edward II. the town suffered the first blow of a calamity which eventually proved its ruin, by the blocking of the entrance to the river which formed its haven. The nature and effect of this change I shall be better able to explain to you by asking your attention to some diagrams, enlargements of plans and views of Dunwich, as two different dates,—the first, 1587; the second, at about the date of Gardner's survey. The decay thus inaugurated continued uninterruptedly. Divers means were adopted by successive sovereigns to stem the tide of decadence. During the wars of the Roses Dunwich had the misfortune to take the losing side. No better index to the gradual decay of the town could be found than the table of rates of assessment under the different sovereigns. This table, however, must be discounted in some particulars. The town was specially favoured both by John and by Henry III., so that the diminution of taxation during their reigns does not necessarily involve an equivalent deterioration in the value of the property.

When the river changed its course, the neighbouring village of Walberswick was called into a sudden importance. The sole evidence of this prosperity is the church to which I now propose to direct your attention, as in connexion with it many very interesting documents of the Middle Ages have been preserved to us. The present church was built in substitution for an older church, situated a short distance off, which was pulled down in 1473, and the remains of the foundations finally obliterated in 1728. The new church, which had doubtless already been commenced, was not completed till 1493, and had, as we shall see, a very short lease of life. Later on we have a very curious and interesting contract for building the steeple, which still remains tolerably perfect:—

The Covenant for Building Walberswick Steeple.

"This Bille endentyd Witnesseth, that on the Tuesday next after the Feste of Seynt Mathie Apostle; the Courte Zeer of King Henry the Sexte, a Comenaunt was maked bytwyn Thomas Bangot, Thomas Wolfard, William Ambrynghale, and Thomas Pellyng, of the Town of Walbureswyck, on the one Partye; and Richard Russell of Donewich, and Adam Powle, of Blythburgh, masons, on the other Partye, that is to seyne. That the forseid Richard and Adam schal make, or do make a STEPEL joyned to the Cherche of Walbureswyk forseid; with foure Bertrass, and one bice, and tirwelle foote wyde, and sexe foote thikke, the Walles, the Wallyng, the Tabellyng, and the Orbyng sewtly, after the Stepil of Dunstale, well and trewely, and competently; a Dore in the West also good, as the Dore in the Stepel of Halesworth, and a Wyndowe of foure Dayes above the Dore, sewtly after the wyndowe of thre Dayes of Halesworth, and thre wyndowes atte nethir Soler; and eche windowe of two Dayes, and foure wyndowdes atte onerer Soler, the Wyndowe of thre Dayes Sewtly after Halesworth. The fornforseid Richard and Adam shal Werke, or doo Werke, on the Stepel fornseid, two Termes in the Zeer, saf the ferste Zeer zeerly, in the Tyme of werkyng, of settyng and leying; that is to sey, bitwixen the Festes of the Annuncyacion of our Lady, and Seint Mychel Archangel: But if it be other Maner concentyd on bothe Partyes, and the fornseid Thomas Bangot, Thomas, William, and Thomas, shal finde alle Maner of Matter of the Stepel forseid; that is to say, Frestoon, Lyme, and Calyan Wat, and Sond; and alle maner Thyngge that nedith to stayyng, and wyndyng, and Schouellis, and alle Maner Vessel that is nedefull to the Stepel forseid. And an Hows to werke inne, to ete, and drynke, and to lygge inne, and to make Mete inne; and that be hadde by the Place of werkying. The forseid Richard and Adam schal take of the fornseid Thomas Bangot, Thomas, William, and Thomas, for the Zarde werkyng, 40 Scheelynggs, of laughfull Money of Ingland, and a cade of fulle Herynge eche Zeer, in Tyme of werkyng. And eche of hem a gowne of lenore ones, in the Tyme of werkyng; so that they Scholden be gode men and trewe to the werk fornsaid."

The contract appears to be contract, specification, and indenture in one. As the horizontal dimensions are given I presume that the yard is 3 ft. perpendicular height. The tower being 90 ft. high, the cost, on this calculation would have been about 60*l.* in money of that date. The value of the herrings, coats, &c., seems not to have been limited, as no period is named for completion. By the time of William III. the town had so dwindled that it was found necessary to reduce the size of the church, which was done by walling in the south aisle of the nave, which is to this day all of the church which is not in utter ruin.

The causes which reduced Walberswick to penury were different from those we have traced in the case of Dunwich. The principal agent in the ruin of the town as of the church was the Reformation. The fishery was the main support of the town. As the seaports had to provide fish for the whole of Catholic England during Lent and on other fast days, the market was a tolerably safe one. The Reformation, under which fasting was made optional and generally discouraged, at one blow reduced this trade to the most beggarly dimensions, and brought about the ruin of the town, which was further confirmed by a fire which destroyed the greater part of the town, 1729, and by a calamitous law suit with the lord of the manor.

The four churches of Walberswick, Southwold, Conhythe, and Blytheborough bore a striking resemblance to each other, and of the four, Southwold only remains to tell, except to the archæologist the tale of its former prosperity. In all these churches we find the same plan, as far as it can be traced, the same number of bays and of clearstory windows. Of the four I should be disposed to consider Conhythe the earliest, as its mouldings appear not fully to have emerged from the middle-pointed character. Otherwise the main lines of all are very similar. A nave and chancel under one continuous roof without a chancel-arch, and aisles on both sides, extending halfway down the chancel, a continuous clearstory from the extreme east to the extreme west of the church, a western tower, and south-west porch, with a staircase turret at its junction with the aisle, evidences of lofty and elaborate rood-screens, of richly-traceried pulpits, and of stalls and sittings. All are in flint and stone work, the ornamental treatment of which is in many cases rarely beautiful. Another feature which we may assume to have been common to all these churches, though in some cases ruin has destroyed the traces of it, is the treatment of the buttresses. These terminate neither with gable ends, tablings, nor pinnacles, but in a flat pilaster of low relief. In a first view of Walberswick it might be supposed that these pilasters, which have not in their general effect much appearance of a Gothic character, were introduced at the time of the remodelling, under William III. Were it not that Southwold church, which underwent no such change, exhibits similar features, a visit to Blytheborough explains them, and shows them to have been the bases of figures, many of which are in this church preserved. Except in this group of churches, and at Bramford, in the same county, I do not remember to have come upon an exactly similar treatment. The two ranges of figures, the longest upwards of twenty in number, must have had a most imposing effect. Another rather special feature, also common to the buttresses of these churches, is the treatment of the tablings. At the top of each tabling is a range of small battlements which serves to give a great piquancy and refinement to these features. It is also remarkable that each church, through all its changes and ruin, has in great measure preserved its ancient pulpit. These features are rare enough in this country. With the exception of the beautiful stone pulpit at Bedford parish church, I do not remember to have come across any of an earlier date than Elizabeth's reign. In this tract of country we have at least three good specimens, similar in type but various in design, the main features of which are fairly well preserved. Of the old town, scarcely any monuments of antiquity remain,—here and there a gable end, or a chimney-stack, in different parts of the straggling town, the angular village green, the quay, and a ferry which has been a century or so in working, of which the ferryman, from his appearance, might almost have counted the years,—this is all of Walberswick which seems to have any roots in the past.

In passing to Blytheborough, it will be as well to confine our remarks almost exclusively to the church. The original prosperity of the town never seems to have been on a par with that of either of the towns we have already examined; and its decay is not less complete. It had, and still has, to some extent, communication with the sea by means of the river, the tide of which flows some mile or so higher than the bridge. It is on record that in Edward the Confessor's time it paid "thirty pounds by tale and one day's money to the State," a revenue which would show it to have been a town of some importance. Its prosperity at a later date is but proved by the magnificent church which the fifteenth century erected. The cause of its decline, according to the historians, was primarily the suppression of the monasteries, but as this was so nearly coincident with the decline of the fish trade, it seems more reasonable to conclude that the same cause was at work in this case too. In 1676 a large portion of it was destroyed by fire, and the sufferers being either unable, or not thinking it worth while to rebuild, quitted the place, which now consists of some twenty cottages at the most. The church is one of the most remarkable in the whole of the Eastern counties, and, unlike those we have already noticed, it is still used in its entirety; but that it can be said to have been maintained, so far as we can see, little or nothing has been spent on it since the day when it was left by its original builders,—while Protestantism, damp, churchwardenism, decay, lightning, and wanton mischief, have played with it the most terrible havoc. The stained glass, of which traces are almost everywhere apparent, has been mostly destroyed, and with it, in many cases, the tracery, which has been replaced by large expanses of lath and plaster; the screens have been mutilated and whitewashed, the stalls shifted, all the sacrarium fittings removed, the wall-paintings obliterated, and much of the Gothing seating replaced by modern pews. In spite of all this, possibly as the beneficial result of extreme neglect, which has had no motive for removing what it failed to

value, it retains remnants, more in number than any church which I know, of its ancient fittings. Of the screens which spanned the entire church and closed in the tower arch, some portion of each remains; a portion of the original lectern, patched and supplemented. The pulpit is of later date, of about James I., but a remarkable work of its kind; an alms-box, which has been decorated by an amateur in execrable taste; the stalls, probably the richest and boldest in idea of any in the country; a large number of the nave seats; the decoration of the greater part of the nave ceiling, of a very simple character, mostly dull red decoration on a white ground, and consisting almost entirely of the monogram "IHS," repeated some hundreds of times, and interspersed with stencilled flowers; and, lastly, the parts of a wooden figure, representing an old man in the costume of the fifteenth century, with hinged limbs, whose function it was, till a few years back, to strike on a bell when the priests entered the chancel. The same figure is to this day in use at Southwold. Of all these features the stalls are probably the most remarkable. They are in long lengths, returned at the west end to face the priests towards the altar, and are divided between their small buttresses into a number of niches, each containing an attached figure of an apostle, saint, or king, which, but for a few casual mutilations, are fairly complete, and mostly recognisable. Externally, the most remarkable feature of the church is the traceried parapet of the aisle, and the same pilasters (in this case crowned by their figures) which we saw in Walberswick Church. I would also mention the treatment of the priests' door in the south side, which is placed in the centre of a buttress, the buttress in this case being made to "fly" and clear the door-head. The tower, though scarcely earlier in date than the fifteenth century, belongs to a decidedly earlier and more severe type than the remainder of the church. We have, however, no records by which to fix the date of any part, except the chancel, and this only by implication. It seems likely that the building of the church, apart from the tower, occupied at least the greater part of the second and third quarter of the fifteenth century. The indications of date are these. The chancel appears to have been the portion of the church erected, or, rather, re-erected, for the following words imply the existence of an earlier chancel, of which, however, no trace remains. This was not commenced in 1442, for in that year John Greyse bequeathed twenty marks *"fabricæ Cancelli Ecclesiæ de Blyborough, si voluerint illum de 4000 fabricare."* That the chancel was still unfinished as late as 1473 is proved by a will of that date. That it was finished soon afterwards is implied by the absence of any similar wills of later date. A catastrophe happened to the church in 1577, described by Stow.

I must omit any notice of the Priory, of which some ruins, utterly bereft of detail, still exist,—thereby hangs a melancholy tale of Vandalism.

Reydon is worthy of interest as the mother church of Southwold, as the sole representative of the primitive type of church, though itself scarcely earlier than the fifteenth century, which preceded the great outburst of magnificent buildings which followed within half a century. The tower bears some affinity to that of Blythborough, and the half of the nave is still thatched, as we have seen was the earlier church of Walberswick. Its peculiar features are the simple but delicate niches which appear in the eastern jamb of nearly all the windows, and the peculiar arrangement of the wood staircase, which starts from the nave side of the chancel arch and discharges in the western side the space between the arch and the wall.

The church of Southwold is the only one of the group to which due honour has been attempted. In this there is, at least, no neglect to be regretted. On the contrary, we have to deplore some amount of undue zeal in the restoration it has undergone. Notwithstanding this, the spaciousness and dignity of its proportions are such as to redeem it from any minor deficiencies which it has incurred. Judging from the same index, that of bequests, we must conclude that the bulk of the church was completed about 1460, though the fine porch must have been a few years later. I will not stay to give a general description of the church, which in general proportions and type is precisely similar to that indicated by the ruins of Walberswick, but will pass at once to the feature in which this building stands pre-eminent, the wood-screen. In general type this does not greatly differ from many examples to be found in this part of the country; but in detail it gives evidence of the exuberant fancy and richness of the workmanship of the Middle Ages. Each tiny buttress, probably some 2 in. wide, is richly adorned with such lace-work of tracery as you might search for in jewelry rather than in architecture, which tracery has been decorated with the utmost care and skill in gold and colours.

The process, as far as I could follow it out, seems to have been this:—When the joinery was complete, the flat surfaces were overlaid with a thin incrustation of fine plaster or cement, which was then stamped into the traceried forms, and decorated by hand. The care and skill spent upon a detail so delicate as only to be apparent on a close inspection, is beyond all praise. I know scarcely any work which has impressed me more strongly with a sense of the extraordinary richness and completion of Mediæval work, and the process indicated is well worth considering with a view to reproduction. We are still far from having exhausted or even appreciated the resources of Mediæval art.

I cannot omit mention of the other features of Southwold Church, and with regard to Covehythe, concerning which I could find no records whatsoever. I must observe that it appears to have been built upon a similar plan to the other churches I have mentioned, but at a slightly earlier date; that it possesses the remains of a small crypt beneath the altar, which no doubt existed in the other churches, but is not discoverable; that in reducing it to the very minute dimensions now required by the village, a different line has been taken from that which we have described at Walberswick, a small church having been built quite within the ruins of the old, which contains the ancient font and pulpit, all that remains complete of the ancient grandeur.

In conclusion, I would ask you to consider what a dream of glorious magnificence these ruins, and the records in connexion with them, bring before the mind: the bold and splendid proportions of the fabric, the richness of glorified colour in the windows and on the walls, the delicacy of detail carried as far as the utmost refinement of the jeweller's art, the rich vestments and splendid ceremonial. As the sea wind whistles through the aisles and shakes the masses of ivy on the walls, it sounds like a dirge of the magnificence which, to the devotion of the past, was a necessary condition of worship; of an age which, much as it has been the fashion in past years to decry it, produced the most magnificent of all the monuments of Christian art in the length and breadth of the Catholic world.

The President and Mr. H. L. Florence having made a few remarks, a vote of thanks was accorded to Mr. Champneys for his interesting paper.

It is announced that on this Saturday (the 24th) the members of the Association will visit Mr. Norman Shaw's new church on the Bedford Park Estate, Turnham-green.

BUDDHIST ARCHITECTURE IN THE JELLALABAD VALLEY.*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

As it became evident we should have a long detention at Jellalabad, I felt a strong desire to do something in the way of exploring some of the mounds. And on making known my wish to the late Sir Louis Cavagnari, he at once placed a working party of Afghans, people belonging to the villages around, at my disposal, on condition that all sculpture or coins found should belong to the Government. There was too much work going on in the camp, and on the roads of communication, to allow of an engineer officer being spared to take charge, but a havilder of the Corps of Guides, named Kalah Khan, and who had at one time served in the Sappers, acted as overseer. He could speak Puchtoo, the language of the country, and he performed his duty in this case very well. About a mile from the camp, at the eastern end of a long line of heights on the south of Jellalabad, and which I have already described as being covered for many miles with remains, was an important group, with a prominent mound known as the Ahin Posh, or the "Iron Clothed Tope." Along with it were the rectangular ridges of the Vihara, in which vestiges of Buddhist masonry could be seen in many places.

The first operations at the Ahin Posh tope were made at my request by Lieut. the Hon. G. F. Talbot, R.E., who was at work making the South Hill Fort, a defensive work close by, from which he detached one or two of his Sappers. The result was the discovery of fragments of one course of Buddhist masonry belonging to the circular part of the tope. On finding this there was some doubt as to whether it was the upper portion we had come upon, from which the dome was sprung, or the first course resting on the platform of the square base. Previously to this there had been some uncertainty as to whether it really was the remains of a tope or not, for no masonry was visible; it was only a rounded mound of earth and stones. Here and there I could see that the boulders of which it was built were visible in layers, and this, although not conclusive, owing to my then limited experience, went a long way to satisfy my own mind. These few stones which were found left then no doubt as to the character of the remains. When I began with the regular working party the first day's operations showed what I expected, that it was only the lowest course of the circular part which had been come upon, and consequently that all the upper portion of the monument had ceased to exist. This I confess was disappointing so far, but still I felt sure that some of the base would be found, and to get the details of this part of the monument was a sufficient motive to go on with the excavation.

I began a tunnel at once, so as to penetrate to the centre of the tope, and commenced it at a point from the north-west. This was to avoid coming upon the central part of the square base,—should any of it chance to exist. There was enough of the circular course above by which to determine the diameter, and the measurements gave it so near to 80 ft. that I put it at that figure as being sufficiently close to represent its size. This makes 40 ft. to the centre, and then there was a portion of the square base also to cut through. As I drove the tunnel ultimately a few feet beyond the centre, its full length may be put as close upon 50 ft. The tunnel had to be made high enough for a man to walk erect, and wide enough for the carrying out of the stones. One man only could work at the end, which he did with a crowbar, extracting the stones. These were all water-worn boulders, the largest being about a couple of feet in size, and embedded in mud, the whole forming a compact mass, so firm that no supports were necessary while making the tunnel. The boulders were to a certain extent built in layers. I had noticed in those topes formerly explored that the tunnel had been begun rather high up, and a descent had to be made; seeing the trouble this would give the men in bringing out the *débris*, I determined on first finding the lowest course of boulders, and making the original surface of the ground the floor of my tunnel. This turned out to be a fortunate plan, for it led me direct on the central cell, which had been constructed on this level. There was no variety in the manner of building, and when at last it was reported that some slates were visible, I knew it was the cell which had been come upon. Being anxious to understand the arrangement and construction of this part of the monument, I remained in the tunnel while the stones were removed on each side and beyond the slates; and it was only after the space was cleared out and the part containing the cell could be seen all round that I began to open it. It formed an oblong heap, quite rude externally, about 4 ft. long and about 3 ft. wide. On the top was a large slate extending to nearly these dimensions, and about 1 in. thick. On being raised it was found embedded in mud, and with another slate slightly larger in size under it. On raising this last, the cell was disclosed; it was a cube of 16 in., formed of small slates about 6 in. long and ¼ in. thick, their edges, which formed the surface of the cell, were smoothly trimmed, but not polished. They were placed very regularly, so that they formed a very well-made receptacle. The bottom was formed of another large slate. I had expected to have found a vase or jar of some kind containing the relics, these having been repeatedly found in topes; but there was no other enclosure than this cell which I have just described. In this instance, there were

* From a paper by Mr. William Simpson, F.R.G.S., read at the meeting of the Institute on Monday evening, Jan. 12th. See page 76, *ante*.

about two handfuls of dark brown dust, which I presume was part of the ashes of the person in whose honour the monument had been erected. On the ashes lay a golden reliquary set with stones; this was about 4 in. long and 1 in. wide; it was octagonal in form, and had two bulbous projections, with holes for the cord by which it was worn round the neck. One end came off, and within was a small hard substance,—which may have been a relic,—there were also two gold coins in it; that being all it contained. Among the ashes I found eighteen gold coins, making a total of twenty. These were all about the same size, slightly less than an English sovereign, and weighed about two drachms each. Seventeen of these belonged to Indo-Scythian monarchs, and extended over three reigns, that of Kadphises, Kanerki, and Hverki. The other three were Roman coins, belonging to Domitian, Trajan, and the Empress of Hadrian. The reign of the first of these Indo-Scythian monarchs is generally given as during the century before Christ. The Roman coins come down to the first quarter of the second century of our era, and are of value as giving the limit of possible antiquity to the monument.

The making of this tunnel took nearly a month, and while it was going on the larger number of the working party were clearing out the base of the tope. I had begun the excavation on the west side, and found that it originally had fourteen pilasters. At the corners, none of the base existed, except at the south-east corner; but towards the middle it still remained about 15 ft. high, with portions of eight pilasters. I was able to make a section of the base mouldings, as well as of the base of the pilasters. I regret to say that in no instance were the capitals left, the pilasters being all destroyed to a point below that member. The tope had been originally constructed with stairs on the south and north; but at some later period similar stairs had been added on the east and west. These were identical in plan with the first stairs, and when I came upon the remains of the one on the west, it was the cause of great perplexity to my mind. I only found the northern portion of its wall, built up against the built square base of the tope; the pilasters had been covered up without destroying them, and as there were five Buddhist figures found sitting on the upper part of the base mouldings, the natural conclusion at the moment seemed to be, that it was an enclosure forming a shrine. Further explorations made it all clear. As was their manner, they built the outer facing of the stairs and filled up the whole space with boulders and mud, covering up the pilasters and figures within. The masonry was different from that of the rest of the tope, and the junction of the new work was irregular,—a small space being left between the pilasters at the junction, which does not exist at the north and south stairs. I cleared out almost all round the square base; it was exactly 100 ft. on each side. The corners had suffered most from dilapidation. The south-east corner was in the best condition; at this point a small part of the lower part of the base existed, it having entirely disappeared from the other corners. The tope was faced with the usual Buddhist masonry, and thickly coated with plaster. I feel sure that it had been decorated with colour, but cannot affirm that any of it existed, except on one of the figures found on the west side, where there were distinct remains of a bright yellow colour, which may be taken as evidence that this was the colour of the Buddhist robes in this part of the world. On the western side of the south stair were the remains in plaster of the legs of a small standing figure; beyond this, and the other five figures on the west, I saw no other evidence of similar remains on what was left of the tope.

My reason for beginning the excavations on the west side was, because I thought that the principal approach would be there, owing to the remains of the Vihara being in that direction. There is a rectangular ridge round the tope, which no doubt formed an enclosed court, and to the west of this is a larger rectangle full of mounds, and this no doubt was the monastery. Here, I regret to say, time did not permit of excavations. I managed to clear out some portions of the rectangular ridges round the tope, and came on the remains of the entrance on the south side, suggesting that the principal gate was for the public, and not exclusively for the monks who dwelt on the spot. The approach is on a line with the axis of the tope, and it must, from the plan, have been a place of some architectural pretensions,—a conclusion which was confirmed by the discovery of portions of colossal figures. The best preserved of these were two human feet *in situ*, each of them being 23 in. in length, formed very beautifully of mud, and covered with fine chunam. I regret exceedingly that these feet, owing to the material, could not be preserved. The position of the feet showed that the figure stood facing the worshippers as they advanced towards the shrine. The probability is that this court round the tope contained smaller topes, and shrines with figures in them, an arrangement which we see in the plans of Takht-i-Bahi and Jamal Garhi.

There are the remains of a square tower built at a late date on the present summit of the tope, and modern walls of rude masonry, not Buddhist, have been constructed all round the old line of the court enclosing the tope. On the northern side this more modern wall is built directly on the Buddhist one; on the south it is neither on the old wall nor is it quite parallel to it; from this the conclusion is probable that the whole place was in ruins when the later erections were made. On the north there is the steep bank down to the alluvial plain of Jellalabad, where the *débris* of the first structure on that side had fallen, thus leaving the wall visible to use as a foundation; on the south a ridge of rubbish was the result of time, and the later builder began his wall on that, and hence his deviation from the old line. These later walls were, no doubt, the work of some Afghan chief who had made the place into a stronghold; very little of it remains, so it may have been centuries ago, and the supposition is that if he wore some particular kind of armour, this perhaps may have given the name of "Ahin Posh" to the spot.

There was a very tempting mound at a village called Gundeh Chismeh; it is on the same ridge of heights, about a mile to the west of Ahin Posh, and to this I removed the working party. The tunnel to the centre, which was made on the same rule as the first one, resulted in finding nothing. Had time permitted, I should have made a shaft down the centre of the tope, as the cell may yet exist on a different level. It should be here stated that Masson found a great many of the topes he explored contained nothing. The supposition is that such topes were memorial.

Although unsuccessful so far as the finding of coins or relics is concerned, yet it was fortunate that I explored this tope, for it revealed to me a feature which might have been otherwise overlooked. At this monument there exists a terrace, 4 ft. wide and 3 ft. 6 in. above the ground-floor, faced with small pilasters, which goes round the whole of the square base, following exactly the outline of its plan. On finding this at Gundeh Chismeh, I sent back some of the men to Ahin Posh to see if such a terrace existed there. Although they excavated for a couple of days, no trace of it could be found, and the search was given up. It turned out that the terrace does exist. After our advance to Gundamuck, the Sappers followed us, and on their arrival Lieut. Bartram, R.E., brought me a section of it. It chanced that Dr. Amesbury, who was attached to the Sappers, had made some excavations at Ahin Posh after I had left, and he came upon the terrace by accident. On my second visit to the Ishpola tope, I naturally looked for this feature, and there is a space round the square base of it, quite wide enough for such a terrace. In the smaller topes explored by Mr. Beglar at Ali Musjid, the repetition of this terrace is visible, although too small to have served for any use; still, this is evidence that it formed a part in all the designs of these structures in this part of the world.

Such being the case, the question naturally arises, for what purpose was this terrace used? I have not chanced to come across any effort to explain the purpose of the circular ledge with its stairs, which belongs to all the Sanchi group of topes, and which may be considered as the counterpart of the floor of the square base of the Afghanistan examples, so that the question here put involves the object of this part of the monument as well, and so far as I know it is probably quite a new one. The Afghanistan topes seem to have had no railing round them, such as we find at Sanchi, Bharhut, and Amaravati, and it may be presumed that the lower terrace represents that feature, and its understood purpose was for the worshippers to circumambulate the shrine while doing their poojah. This still leaves the large space of the square base unaccounted for, and its importance, from the large stairs leading up to it, shows that it was connected in some way with the ceremonies. If the size of these topes did not tell us, we might infer from the arrangement of the Chaitya temples of the rock-cut caves, that they were the high altars, or cathedral churches, of the Buddhist system; consequently, there would be some form of elaborate service performed at them. My notion is that the monks sat on the square base chanting from the books of ritual, accompanied with musical instruments of various kinds; Fah Hian mentions the use of great drums, conches, and cymbals at Hada. . . . .

There is what I may call a strange form which appears in the Yuzufsai sculptures, and also in the Afghanistan remains. It is often placed along with the arch just described, and seems to be interchangeable with it. I have a theory about this form, but I, at the same time, confess to having very little evidence to give in support of the idea. This may be described as two sloping jambs with a lintel over them, and I take it to have been originally a door. So little of the walls of the monasteries are left, that the forms of such openings as doors or windows are rather uncertain. At Lundi Khana, in one of the ruins on the south side of the pass, I found a window, its lintel was gone, but the sides sloped inward to the tope; among the walls of the Vihara at Ishpola, I found part of a constructed opening,—I am not quite sure what it was,—but its sides also sloped inwards. I think that in Tibet sloping jambs of doors are found, and the connexion between Afghanistan and that country, already dealt with, might justify the supposition that it is a continuation of the same form. My notion is that this is the pre-Buddhist construction of doors in the region of the Indus valley, Afghanistan, and of the Himalayas, towards the Hindoo Koosh; that it was, of course, a wooden form, and implies a flat roof. I take it that it was, in the locality just named, the counterpart of the round Buddhist arch of what I may call India proper, and that the round form originally belonged only to the south of the Punjab. I give this suggestion, as it has formed itself in my own mind; the materials on which it is founded are of the scantiest, but it may lead others to investigate, and if it could be established it would throw considerable light in a direction where it would be of value,—that is, towards explaining the first sources of the architecture of Hindostan.

At Hada, I found in one of the topes explored by Masson, that one tope had been built so as to enclose another; this process we know took place in Ceylon. Masson's excavations had, in the lower part, cleared out the first tope, and its form, like a matrix, was left. I made sketches of this, but they all seem too perfect as a representation of the rude mould remaining. The small tope had been about 9 ft. in diameter, and, so far as I could judge, it seems to have been of a different shape from the later topes. The Hada topes are generally rude, shapeless masses now, but they are markedly different, I think, from the others in the Jellalabad valley. This particular tope, in which was found the matrix of the other, had some of its external masonry standing, and it was not the usual Buddhist kind. It was built of small squared fragments of a coarse calcareous stone. Masson calls the spot "Gundi Kabul," and the topes here, as well as others at Hada, were, judging by small fragments left, of the same style of building. Being all very much ruined, and no architecture left, no comparison can be made from their styles of architecture. Still, the absence of Buddhist masonry is in itself a very marked difference. The ruined condition of the remains contrasts with the fragments of architecture still visible at the Darunta group, and suggests the possibility of a greater antiquity belonging to Hada. The Ahin Posh cannot be older than the second century, A.D., but I am inclined to think it may have been two or three centuries later. The Nagara Goondi was probably older; my impression is that it was much older. A copper coin of Apollodotus, with the tripod of Delphi on it, was found in the piece of the tunnel that was made. This king's date is given as 110 B.C. It would be an important point if it could be established that a Buddhist monument existed as early as this in the Jellalabad valley; and I regret very much that the exploration of this tope was not finished.

As it stood on the site of the ancient Nagarahara, it may have been the stupa of the tooth mentioned by Hiouen Thsang as in the interior of the town, and which he describes, even at the time of his visit as being "antique," and that it was remarkable for "its elevation, its size, and its magnificence."

The caves of Afghanistan are intimately associated with the Buddhist remains. They are generally found together. As already explained the monasteries stood on elevated ground, and the caves are in the scarped rock beneath. The quantity of these caves is as much a matter of surprise as the quantity of heaps and mounds of what had formerly been structural erections. They are simple recesses excavated in the rock. They vary in size, but if I say 20 ft. long, 12 ft. high, and 10 ft. wide, it may convey a rough notion of their average size and proportions. In some cases two of these are connected by a passage behind, and one cave at Hada has still larger ramifications. One of the most important group of caves is at Darunta; the front of the perpendicular scarp overhangs the Kabul river, and a long tunnel had to be cut in the rock behind the caves as a means of communication. The people there call it "the Bazaar." At this place, on the face of the same cliff, is a large niche, perhaps 30 ft. high, in which we may presume a colossal figure of Buddha sat looking over the stream and the valley beyond. None of it now remains. The most of the caves at Ajunta, in Western India, are of the Vihara kind, that is, they are monasteries, formed of a central hall, with numerous cells all round; these are very small places. In Afghanistan, as far as my observation went, I only found one cave arranged on the Vihara plan of Western India; this is one of the Pheel Khana group. All the others were on the separate cell principle. A similar rule prevailed in Ceylon, where, according to Hardy, the space allowed for the cell of a Buddhist ascetic was 12 spans long by 7 spans wide. The Afghanistan monks were not quite so limited for space as this statement would imply. The earliest Buddhist caves in India are separate cells, and my guess is, that this type must have been carried beyond the Indus by the first propaganda, and at an early period before the rock-cut Viharas began. The resemblance of the Afghanistan caves to those near Buddha Gaya, is not confined to the similiarity of type, or to the size alone. The arched roof found in nearly all the Afghanistan caves is a marked point of identity. Where the arch terminates the wall recedes an inch or two, leaving a drop-ledge,—this being another peculiarity of the early Buddhist caves of India. Most of the caves in Afghanistan are in a very decayed condition, but in one or two I came upon, rather better preserved than the others, the sides sloped inward towards the top. From some former remarks on sloping door jambs, this may have been done by the people on the right of the Indus after their own models; still, it is a feature to be found in most of the early rock-cut caves south of the Indus; the Lomas Rishi, and the Bhaja Caves, may be cited as examples. In most of these Afghanistan caves there is a small recess, which I take, from its size, to have been for the bed of the ascetic, and this leads to the suggestion that the cave itself had been fitted up as a shrine, to which devotees would come. The caves were all thickly plastered, and I have no doubt painted, for some fragments were found remaining in a small cave at Hada, and frescoes we know existed in 1842 at Bamian. There is a nomadic race called "Koochis," who live with their flocks on the higher lands in the north during summer; they come down to the Jellalabad valley in winter, and use these caves as their dwellings; the result has been the utter ruin of the interiors, every part has been covered by a thick black deposit from the smoke, so that all decorations or inscriptions are lost. At Hada there are a few small caves of a distinct character. These are square, and with a dome in the centre of the roof, which is otherwise flat. One of these caves is scarcely over 6 ft. square; 11 ft. 6 in. and 13 ft. are the size of two others. It was in the smallest of these caves, its smallness being such that the Koochis could not use it, and it thus escaped from the effects of smoke,—that a fragment of painting was found with the colours as perfect as if only recently put on. On the small dome of this, as well as of the others, the remains of painting were visible, nearly all of them Buddhist heads with the circular nimbus. An excavation in one of these square caves brought to light a portion of a base under the dome, with figures in plaster on it. This may have been for a Buddhist figure, or a small tope. If this last was the case, they form a curious contrast to the splendid Chaitya caves of Western India.

In conclusion, I may be allowed to express the hope that further explorations will be made among the remains of Afghanistan. The existence of a style of art in India, coming from the valley of the Euphrates, and which most probably dates from the time of Darius, is now made clear. That the Greek architecture of Bactria came south and crossed the Indus, is another point also beyond a doubt. Afghanistan is the highway by which these styles came, and that is the region to seek for knowledge regarding them. There are vast regions beyond Afghanistan regarding which we are literally "know-nothings." These localities must be visited and made known to us. Armies may march and fight in Central Asia, and no matter who conquers, archæologists must march also, and explore. They must conquer. When Afghanistan is archæologically ours, the student of Indian antiquities will be a long way on towards meeting the explorers of Nineveh and Babylon, and I hope that the day is not far distant when these two army corps may meet and shake hands, and compare notes, somewhere about Ispahan, Yezd, or Naishapur.

PRACTICAL HYGIENIC DEMONSTRATIONS.

THE second of the series of demonstrations now being conducted at the Parkes Museum took place last Saturday afternoon, when there was a large attendance to hear Professor Corfield's address on "Ventilation, Lighting, and Warming."

Dr. Poore having said a few words of introduction, Professor Corfield commenced his lecture by referring at length to the subject of ventilation, and said that the air in rooms was rendered impure by respiration and by the products of combustion from lights and fires. The purpose of ventilation was to change this impure atmosphere for fresh air. In order that the air might be kept fresh, it should be changed three or four times per hour; and as a general rule, this should be insisted upon, exception only being made in very large rooms. Coming to agents for ventilation, the wind was described as powerful, but unsatisfactory on account of its irregularity. The aspiring action of the wind was useful in connexion with ventilation-pipes at high levels. When the wind blows over the top of a pipe or shaft, it causes a diminution of pressure of the column of air in the pipe or shaft, and so produces an up-current. With regard to the admission of fresh air into rooms, it should, theoretically, be at the lowest part of the room, but practically the outer air cannot be admitted directly in this way. The action of air was said to be the same as that of water; thus when a hole was made straight through a wall, a column of air was forced into the room in the same way as water would be from a pipe. It was, therefore, easy to see that what was wanted was to admit the fresh air in such a way as to give it an upward direction, bringing it, in fact, into the room after the manner of a fountain, so that the draught might be spent before it reached the lower part of the room.

Many kinds of ventilators were shown and explained. The Sheringham and Dr. Arnot's valve were useful, but were too often wrongly fixed; the first too near the ceiling, and the other into chimney-flues. The Currall ventilator was shown as suitable for the admission of air through doors and windows without draught,—a very simple contrivance, without valve or spring, for turning the incoming current of air in a direct line towards the upper part of the room. The arrangement of the Currall ventilator was such that the amount of fresh air to be admitted could be regulated as desired, or shut off at will. An ordinary window was commented upon, and the plan of placing a block of wood under the bottom sash, first introduced in the *Builder*; an opening at the middle of the window was effected, forming an inlet for fresh air between the two sashes. With this arrangement the ordinary sash-fasteners were of course useless, but with Tonk's automatic fastener the wiadow could be so opened for ventilation and still be secure. Various kinds of fixed and rotating cowls were exhibited, and some experiments made with lighting apparatus, the advantage of Benham's ventilating globe light being demonstrated by means of gas connected to the pendant exhibited, with full-size section of floor over, showing the joist and ventilating pipes as actually fixed in houses. Two systems of pipes are connected with the pendant; one to take away the products of combustion, the other to admit fresh air. This experiment, and another with General Franzini's reflector, were examined with marked interest.

The lecture closed with a description of some grates and stoves, particular mention being made of the Thermhydric grate, the gas calorigen, and the stove introduced by Capt. Douglas Galton.

During the lecture questions were asked which showed the intelligent interest taken in the lecture.

Mr. Hodgson Pratt announced that a prize would be given to the member of a working men's club who sent in to the Council the best notes of the lectures.

A hearty vote of thanks to Professor Corfield closed the proceedings.

THE SITE FOR THE BATTERSEA BATHS AND WASHHOUSES.

THE site on which the new public baths and washhouses at Battersea are to be erected has at length been finally fixed upon, after several ineffectual attempts of the opponents of the projects to prevent their being carried out, notwithstanding that the Act was some time ago adopted, and Commissioners were appointed. At the last meeting of the Battersea vestry, it was moved by Mr. Gerard, one of the opponents, that all further proceedings in reference to the baths and washhouses be suspended for twelve months. His reason for moving such a resolution was that a public company was now contemplating opening such premises. Amongst other members, Mr. Young strongly opposed the motion, urging that the washhouses would be a real boon and great benefit to the poor, who now had to do their laundry work in confined premises. He instance St. Pancras, Marylebone, and Paddington, where the washhouses had been found remunerative, adding that Kensington had just decided to give 23,000*l.* for land whereon to erect baths and washhouses, whilst they, in Battersea, in the matter of site, were starting under most favourable circumstances, as they were in a position to utilise the allotments which belonged to the parish for the purpose. It was ultimately resolved to ask the Commissioners to take steps for appropriating a portion of the Latchmere allotments as the site for the new buildings, and at last week's meeting of the guardians of the Wandsworth and Clapham Union, an application was received from the Commissioners, asking the consent of the guardians to the appropriation of a site on the Latchmere allotments, which was at once granted, the chairman observing that baths and washhouses would be a great benefit to the poor, and that the consent asked for should be granted. The necessary consent of both the Vestry and the guardians as to the site having now been obtained, the buildings, it is understood, will shortly be proceeded with.

Art Gallery for Birmingham.—At the meeting of the Birmingham Town Council on the 6th inst., Alderman Collings read a report of the Free Libraries Committee, who had had under their consideration the necessity of erecting a building to serve as a temporary art-gallery and museum of arms, and had unanimously resolved to make an application to the Birmingham Town Council for the use of a piece of land as a site for a temporary art-gallery. The committee called attention to the large number of visitors to the art-gallery and museum of arms, observing that the objects of art in the possession of the Corporation could not be displayed at Aston Hall. The Corporation had now a splendid collection of Japanese metal work, and the Bragge collection of rare and precious stones, unique in extent and quality, which was purchased for 1,000*l.* from the fund placed at the disposal of the Corporation by Mr. J. Chamberlain, M.P. As yet these collections had never been exhibited, it being considered unsafe to place them in Aston Hall. The committee suggested that part of the unused space in the rear of the Council-house be allotted for the purpose. It was resolved that the recommendation of the Free Libraries Committee should be referred to the General Purposes Committee.

THE STRIKES OF THE PAST TEN YEARS.

THIS was the subject of a paper read by Mr. G. Phillips Bevan before the Statistical Society on Tuesday evening last. He said that the total of strikes from 1870 to 1879 inclusive was 2,352. The years 1871-72 showed the greatest number—viz., 343 and 365, being the eras when there was an enormous inflation of prices, and when the men pressed home their demands not only for higher wages, but for diminution of working hours, which, after severe struggles, they obtained; and the number of 325, marking the past year, was the next largest item, showing the reverse action, in which the masters, taking advantage of the low wages and general depression, endeavoured to wrest back the additional hours. Demands for increase of wages or resistance to a reduction were the causes of nine-tenths of the trade quarrels, the others being piecework, alterations of factory rules, insubordination, the introduction of female or juvenile labour, legislative interference, labour-saving machinery, unpalatable arbitration, employment of non-unionists, &c. The number of trades implicated in strikes during the ten years was 111, of which the builders headed the list with 598 strikes; the carpenters and joiners having been the most restless, and having had 187 quarrels; the masons following next with 151. The reasons for this unsettled tendency appeared to be that the employers were mostly men of limited capital, who had themselves risen from the ranks, and were obliged to practise considerable cutting down in prices. This, too, was the reason why the building strikes were generally settled sooner than others, and more often in favour of the men. The inequality of the wages in the building trade was another great reason for the frequency of the strikes. The colliers followed next for 339, and the textile trades for 277. As to the localities, the most productive in strikes were Scotland, 473; Yorkshire, 388; Lancashire, 149; Northumberland, 138; South Wales, 135; Durham, 131; in fact, where the bulk of the iron, coal, shipping, and textile trades are found. The total time wasted in strikes during the ten years, taking those the duration of which was known, and giving one week to all the others, was 9,027 weeks, or 51,162 working days. Some of these individual strikes lasted as long as 57 weeks; and nearly 50 lasted over a time varying from 21 to 50 weeks. The great difficulty, after all, lay in getting information as to the numbers engaged in each strike, and also in the results. As far as the latter is concerned, the information was most meagre, only 351 being able to be accounted for out of the total of 2,352. Of these, 189 were lost, 71 won, and 91 compromised. These figures are unfavourable to the men on strike, but it must be remembered that many a successful strike entails far greater advantages than the mere fact of the strike shows, as a small section of a trade may fight a battle for the whole trade, and by winning it obtain very considerable pecuniary results, extending over a long period. In 114 strikes it was possible to obtain both the numbers engaged and the duration of the strikes, and, estimating the average wage at 4s. per day for five working-days per week, the money lost in wages amounted to over five millions sterling. Mr. Howell claimed to put as an asset in favour of the men the strike pay, averaging about 10s. per week, which would amount to a large sum; but he seemed to forget that this was the men's own money, contributed by themselves, and that it was really only shifting the coin from one pocket to another. He was probably right in thinking that many a strike had resulted in a permanent gain, which had well repaid the battle, but the results of these statistics seemed to show that the many losses far outbalance the few gains. And if these were the losses in wages in 114 strikes, what were we to say for the remaining 2,238? Even after the wage losses were considered—the workmen only forming one part of the social economy—there were the losses to the masters, depreciation of plant and machinery, deterioration of house property, unpaid rents, shop bills in arrear, the ruined tradespeople, the accumulated poor-rates, illness of wives and families, trade driven away; all these results, if they could be put into figures, would probably treble the losses of wages. It was difficult to propose a remedy, so many had been tried and failed. Arbitration had been but a doubtful remedy, and had been so played with fast and loose that it had lost all its dignity, neither masters nor men having faith in it. As to a remedy, it might be worth while making an experiment of the Conseils de Prud'hommes, as they exist in France and Belgium. In France, 26,000 cases on an average were annually heard by these councils, and a reconciliation was effected in about 1,800, or 71 per cent. Of the cases, 61 per cent. were relative to wages, 14 per cent. to dismissals, and 5 per cent. to apprentices; and besides the disputes between masters and men, these boards settled cases of quarrel between the men themselves. In Belgium, in 1877, out of 3,854 cases heard, 2,866 were conciliated. Why should not similar legalised institutions be founded in this country, in the shape of twelve local industrial boards for the twelve great industrial counties? Each board should consist of an equal number, ten each of employers and employed, each member being regularly elected for a term of three or five years. The board should sit as often as required, and the expenses be met by a scale of fees based upon the amount in dispute; and if this proportionate sum had to be paid down before hearing, it would greatly tend to prevent the quarrel coming to a head. A superior board of appeal might be constituted for the whole kingdom, consisting of twenty-four members—one employer and one employed—out of each district board. The decisions of the board should carry legal weight, and should be enforced like the orders of a judge or magistrate. Should any body of men decline, after hearing, to abide by the decision of the board, they must be considered in the light of persons refusing to obey the laws, and must be dealt with accordingly. If the case was decided in a way unpalatable to them, they could leave the work, and let the masters fill up their places as best they could; but the least attempt at coercion, either moral or physical, should be stringently punished.

THE UNEMPLOYED OF LONDON.

A MEETING of the unemployed workmen of London was, on Saturday, held in Hyde Park, "for the purpose of taking into consideration the distress now prevailing amongst the industrial classes of the metropolis through the depressed state of the labour market, and further to consider what remedies should be applied to bring about a better state of things." It is stated that in London there are 30,000 men unemployed in the building trade.

Mr. P. Kenny read a memorial which it was intended to send to Lord Beaconsfield, asking his lordship to receive a small deputation to represent the sore distress now existing amongst the industrial classes of the metropolis. It also suggested that public works should be carried on, to find temporary employment for those out of work.

It was also resolved, "That in order to relieve the present distress amongst the industrial classes of the metropolis, this meeting urgently appeals to the Lord Mayor of London to receive a deputation of unemployed workmen, for the purpose of pointing out how the Corporation might mitigate the prevailing distress."

A deputation from the meeting subsequently waited upon the Lord Mayor, who said that personally he had great sympathy with the unemployed workmen. All that he could do, however, in his official capacity would be to use his influence with the City Corporation to find the men some employment. He promised, also, to use his influence with Messrs. Mowlem, Burt, & Co., the contractors for the new vegetable market, to put on additional workmen, as he believed there was room for many more hands there than were now engaged on it.

THE PAINTERS' COMPANY.

WE understand that the Painters' Company, being desirous of extending the usefulness of their guild, have invited a deputation of house-painters to attend a meeting of their Court on this Saturday, 24th, to consider how the object they have in view can be brought to a satisfactory result. This company distribute annually upwards of 2,000*l.* to poor old blind people and disabled painters, but have very limited funds independent of those for charities. They were formerly the special guild of the artists down to the period of King George II., and their hall contains interesting specimens of the artists of former times.

THE DUBLIN BRICKLAYERS.

AT the last meeting of the Dublin Corporation a deputation of "the regular bricklayers" of that city was in attendance, and respectfully requested a hearing before the Council relative to certain works contemplated to be done by the Corporation, and the state of their trade generally. The request having been conceded, Mr. Flood, one of the deputation, said that their trade was in a very bad state, and as the Corporation were about to begin some work at the Mansion House, were it large or small, the object of the deputation in appearing there was to ask the Council to give the contract to some regular employer in the city who employed the resident labourers of Dublin. They made this appeal on behalf of their wives and families: they pleaded there for the right to live, and they pleaded in the cause of the trade of the city of Dublin that the Corporation would take their claim into consideration. Let the contract be given to some of the regular employers, of whom a list could be published. However small the amount of work to be done was, if the contract were given as they desired, it would at least be a recognition of their right to live in their own city. Their wages were spent among the shopkeepers of Dublin, they paid the local taxes, and contributed to the local charities.—The Lord Mayor promised that the representations made should receive the consideration of the Council.

PROPOSED NEW INFIRMARY BUILDINGS AT FULHAM.

THE Local Government Board having urged the Fulham Guardians to provide separate infirmary accommodation in the union, a committee of the whole Board has taken the matter into consideration, and at the last meeting of the guardians the committee recommended that additional infirmary accommodation for not less than 500 of the sick, be forthwith provided, inclusive of such of the present buildings as may be made available. They also recommended that the guardians authorise the committee to call in the temporary services of an architect to advise them in the matter. Considerable discussion took place on the subject, Mr. Froy, one of the members, expressing an opinion that accommodation for 400 would be sufficient, and that the architect should be instructed so to design the building that it would be capable of extension if necessary. He moved an amendment to that effect, which was negatived, and the recommendation of the committee was adopted. A further amendment that six architects be adopted to submit detailed plans to the guardians, and that a premium of fifty guineas be offered for the best design, was lost.

PROPOSED CONVERSION OF THE OLD LAMBETH BURIAL-GROUND.

STEPS are being taken with a view of turning to account the long-closed, old burial-ground in High-street, Lambeth, the Vestry having entertained a proposition by one of its members for converting it into a sort of pleasure and recreation garden. At the last meeting of the Vestry, Mr. Sharpley, in drawing attention to the subject, observed that no funeral had taken place there for the last thirty-five years, and that at present the place was very unsightly. He, therefore, thought it was very desirable that it should be laid out as a pleasure-ground, and he moved a resolution to the effect that the question be referred to a special committee with the view of carrying out his proposal, the committee to include the churchwardens and the members of the Burial Board. The motion was unanimously agreed to. The old burial-ground covers a very considerable area, which, as a recreation-ground, would be a welcome boon to the inhabitants of the district.

Proposed College for the Blind.—Mr. F. Charsley, registrar of Eton College, has offered to give Botham's Hotel, the famous hostelry opposite Salt-hill, near Slough, as a site for the College for the Blind, for which it will be remembered the late Mr. Gardner, father-in-law of Mr. R. Richardson-Gardner, the member for Windsor, bequeathed the sum of 300,000*l.* In addition, Mr. Charsley has offered the trustees the choice of other sites at Arbour-hill and Mackenzie-street, Slough, the latter being near the British Orphan Asylum.

THE PROPOSED HOSPITAL FOR INFECTIOUS DISEASES AT HEYCOL HILL, NEAR SITTINGBOURNE.

SIR,—As the time for sending in the competition drawings for this proposed building expires on the 31st inst., I take the liberty of suggesting that as "the designs will be subject to the approval of the Local Government Board," it would prove not only more satisfactory to competitors, but, greatly to the convenience of the committee, trustees, or other authorities, if the whole of the drawings were submitted to the Local Government Board, prior to any selection whatever being made, or decision arrived at.

My knowledge of cases where local authorities have made selections which have afterwards been upset by the decisions of the Local Government Board, induces me to offer these remarks.

CITIZEN.

CITY CHURCH AND CHURCHYARD PROTECTION SOCIETY.

AT a meeting of this society held last week, it was stated that the Rector of St. Margaret Pattens, Rood-lane, had received a notice from the Metropolitan Inner Circle Railway, scheduling the churchyard of that parish for the Street and Railway Scheme. The secretary had also been in communication with the town clerk of Exeter on the proposed removal of five of the City churches there; but a reply had been received stating that the project had been abandoned on account of the refusal of the Dean and Chapter to sanction such removal. A resolution was passed thanking the Dean and Chapter for refusing to give their consent (as patrons) to any such proposal.

Mr. Gilbert Scott has promised to read a paper penned by his father, the late Sir Gilbert Scott, on the subject of removing the churches in the City of London.

Letters were read from the Poet Laureate and the Slade Professor of Art at Oxford, adding their names as vice-presidents.

GAS-PIPES AND RATS.

A FEW days ago the household of Mr. Henry Browning, 10, Cambridge-gardens, Kilburn Park, were aroused by an escape of gas which filled the drawing-room and hall; fortunately, before the jets had been lighted. The gas was at once turned off from the main; and, on Mr. Browning returning home, he had the flooring of the drawing-room taken up, when a small hole was discovered in the lead piping, and near to this a rat's nest, with young ones. The hole had been drilled out as cleanly as if done by machinery; but it was evidently made by rats. For several days previously to this the scampering and squealing of rats around the skirting-boards had been rather too audible to be pleasant, and the assumption is that these rats with instinctive nature assumed that the pipes would contain water, and thus used their teeth to obtain a supply. It is possible that rats may have been the means of causing some of the recent explosions in private houses, which have appeared so mysterious. An effectual remedy for this would be to substitute iron for lead pipes where possible, in conveying gas through private dwellings, as iron would be impenetrable to rats' teeth. Mr. Browning has preserved the leaden gas-pipe, in which the hole appears, for the examination of the curious.

IMPROVEMENTS IN BRIGHTON AND THE ARTISANS' DWELLINGS ACT.

THE Corporation of Brighton are about to make street and other improvements in connexion with the erection of new buildings under the operation of the Artisans' Dwellings Act. It appears that upwards of two years ago two areas of the aggregate extent of five acres and a half were declared to be unhealthy, under the Act, and the buildings upon them are about to be removed. The question as to the erection of new buildings on the site was discussed at a meeting of the Council which has just been held. Two projects were considered. One of them was for erecting separate cottages, and the other for erecting dwellings in flats, the estimated cost of the first-named project being 70,132*l.*, and that of the last-named 52,817*l.* The first-named plan was adopted. The estimated cost of purchasing the tenements in the condemned areas is 77,401*l.*, and a further sum of 46,599*l.* will be required for the purchase of additional land and property for the purpose of widening streets, and erecting cottages required for the existing population of the areas in question, together with 5,762*l.* for roads and sewers. But it is calculated that 59,630*l.* can be deducted from that expenditure by the resale of land, leaving the actual cost of the improvement and the erection of the cottages to be 70,132*l.* A better class of property is to be erected on the sites of some of the condemned buildings, with the view of increasing the rateable value.

TENDERING AT HAMMERSMITH.

SIR,—It is but rarely that I rush into print, but there are times when I feel impelled to do so, in order that your numerous readers may not be misled by specious letters which have just enough truth in them to commend themselves to the reader without being the whole truth; and, as you well know, sir, that half a truth is frequently about equivalent to a whole lie, it is sometimes necessary to take up the pen to place the whole state of the case in juxtaposition with that which represents only a part.

In your issue of the 10th inst., your correspondent, Mr. Alexander Pilbeam, informs your readers that on the 20th of December the Fulham Board of Works advertised for tenders for a certain sewer, the said tenders to be delivered at Broadway House on the 31st of December, and insinuations were made in your correspondent's letter that some underhanded business was connected with the transaction.

As an old inhabitant, and not a very small ratepayer, I thought it would not be an improper thing to make some inquiries, and, having done so, I beg to trespass upon your space to lay the result before your readers.

I found that the Board of Works were induced to make the time between advertising and receiving the tenders so short,—firstly, in consequence of the urgent need of the work in question; and secondly, because they believed that for so simple a matter as so many feet of sewer in an open road, it would not require very much calculation to arrive at a fair estimate of its value; and although the surveyor, I am told, suggested it should be deferred for another fortnight, the Board considered the matter so urgent and simple, that they resolved to have the tenders in upon the day named.

But, sir, this does not seem to be the *gravamen* of the complaint of your correspondent, who tells you that he knows something of the Fulham Board of Work and "its little ways" (little minds are apt to look for little things), but I am not sure, by any means, that the general public look upon the Fulham Board of Works as acting otherwise than honourable in all its dealings.

That body, like all other corporate bodies, may make occasional mistakes (to err is human—to forgive, divine), but I have known enough of its members, ever since the Board was constituted, to know that, as a body, they have been actuated only by one motive, and that is, doing their best in the interest of the ratepayers whose representatives they are.

I now come to another point. It appears that the Surveyor of the Board has several sons (and as Sairey Gamp says, "blessed is the man as has his quiver full of such"), and has thought fit to instruct some of them in the art and mystery of surveying, quantity-taking, estimating, &c., and that one of them took out the quantities for this work. For the life of me I can see no reason why the surveyor's son, being competent, should not do that which any one else may do if he pleases. Your correspondent says very truly that there was no *compulsion* upon any intending contractor to take these quantities; but he was not candid enough to tell you that he insinuated that there was something wrong by intimating to the contractors that as a surveyor he knew how these things were done,—that certain favoured contractors were privately informed that the quantities were very full, and that they might safely take off 15 per cent., or something like that, after pricing them out. Sir, if such were the fact, your correspondent, being a surveyor, could readily have tested the said quantities, and if found as he stated, have fully exposed the fraud. I hear also that most of the contractors tested the quantities for themselves. I should be glad to hear their version of the story. Such things may be in your correspondent's experience and practice; but, if so, I can only say that his experience has been obtained in a very bad school, and it is therefore no wonder that he has not followed his profession. My experience of the profession is that its members, almost without exception, are honourable men, and I believe that may be considered as a general opinion; therefore such scurrility may be taken for just what it is worth.

I am afraid I am trespassing too much on your space, but I should like to say a word about the Scrubbs-lane sewer, as it is called. Your correspondent says that the Metropolitan Board have accepted a tender for 2,080 ft. (part of the same sewer) for 3,080*l.*, and that the bricks of which it is to be constructed will cost 3*l.* 3*s.* per thousand,—a more expensive brick than is generally used. He did not tell you that a large portion of the sewer is only 4½ in. thick, and cased with concrete. He did not tell you that the next lowest tender for the same work was 4,020*l.*, and the next 4,490*l.*, and so on upwards. He did not tell you that this part of the sewer was in open ground, without any special difficulties, and only from 13 ft. to 15 ft. deep. No! If he had done so, it would have represented more than "part of the truth," and the comparison of that work with the portion to be constructed by the Fulham Board would not have been so unfavourable, nor would there have been sufficient grounds for casting suspicion on the Board and its officers.

It may be as well that your readers should be further enlightened on the subject. The length of this latter portion of the sewer is 2,650 ft., 9 in. in thickness, built of good stock bricks, and a large portion in cement, and wholly cased in concrete where in tunnel (which is more than 2,000 ft. of the whole length), and also cased in concrete to spring out elsewhere. The depth is considerable, varying, I understand, from 30 ft. to 30 ft. It passes under the North-Western railway and the Company's land for nearly 200 ft. and special arrangements have had to be made by the Contractors (as I have ascertained by inquiry) in doing this work, so that the traffic of the line might not be impeded, and in such a manner as dictated by the engineer of the railway, the contractor taking all responsibility for the security of the line and the safety of the traffic, and to pay all costs and charges required by the company. Is that nothing?

It has to pass under the invert of the railway tunnel, under the Grand Junction canal, and the works are at this time, I hear, flooded with water. Is that nothing?

It has to pass for about 700 ft. through lands belonging to the Great Western Railway, and under all their main lines, also under the West London Junction Railway, altogether under about twelve or fourteen lines of rail, all subject to constant heavy traffic, and with the same responsibilities as before adverted to. Is that nothing?

I could point out many other contingencies which the contractor had to consider, but I think, sir, I have said enough to convince your readers that with only part of the truth before them it is not possible to judge the merits of any case.

I will not trouble you further than just to say that if the Metropolitan Board's sewer had been constructed of good stocks, instead of the expensive bricks so prominently laid before you, the saving would not have been more than 300*l.* at the utmost. So you see that is not the item upon which your correspondent can rely to prove the case that a very much more expensive material may be used (if with discretion) at less cost than work done by the Fulham Board of Works with a less expensive material, and so give an opportunity of casting mud at that Board and its officials.

AUDI ALTERAM PARTEM.

SIR,—Having read a letter in your issue of the 10th inst. headed "Tendering at Hammersmith," and signed by A. Pilbeam, surveyor, &c., I beg respectfully to inclose you an extract which appeared in the *West London Observer* on the same date, and which I think will speak for itself, thus saving needless and unnecessary discussion, as the person alluded to in it you will see is none other than the above-mentioned.

A CONTRACTOR.

"SIR,—The Fulham District Board of Works, at their fortnightly meeting last week, succeeded in playing a little practical joke, which would have been a great success had it been the 1st of April instead of the last day of the year. After duly advertising a new length of sewer in the Crown-road, Fulham, fifteen contractors attended with their tenders, at the time and place specified. After waiting some time, we were ushered into the Board-room. After comfortably seating ourselves, and anxiously waiting for the verdict, the chairman rose and told us, in a very polite and feeling manner, that unforeseen circumstances had arisen at the last moment, which had induced the Board very reluctantly to postpone the opening of the tenders till that day fortnight. After recovering a little from the surprise we withdrew to the ante-room (with 'sold' plainly written on each countenance). Here a gentleman was waiting to address us. After introducing himself to us as an architect and surveyor out of practice, he told us he had discovered the greater part of us had been misled by the quantities supplied to us, and from his experience in the profession to which he had the honour to belong, he could tell us that quantities were wilfully taken out wrong to the extent of 15 per cent. in favour of a few contractors who were put in possession of the secret, and from his knowledge in his profession he should strongly advise us all to employ a professional man to take out the quantities for us; then we should be sure to have them correct. After adjourning to consider the address and information he had given us gratis, with a peep behind the scenes of his profession, we all of us came to the conclusion that we were quite able to look after our own interests without professional assistance, and without being taken by the hand in such a fatherly manner as the gentleman suggested; especially after carefully preparing notes we found the greater part of us had taken out our own quantities, and found they were very correct with the quantities handed to us at the office. The contractors, in a body, whether favoured or unfavoured ones, had no complaint to make. They were all quite satisfied with everything, except the final act. Hoping the profession, whether in practice or out, in future will allow us to conduct our own business, except we apply to them in the regular manner as clients, we remain, dear sir,

ALL THE VICTIMS."

*** The list of tenders since sent in, and which we append, would seem to show that it was of very little consequence who took out the quantities, or whether they were taken out at all:—

For new sewer in the Crown-road, Fulham, for the Board of Works for the Fulham District. Mr. A. Bean, surveyor:—

Kempling	£3,050 0 0!
R. & E. Smith	3,800 0 0
Dickinson	3,398 0 0
Crockett	3,344 0 0
Nobbs & Co.	3,210 0 0
Killingback	3,000 0 0
Williams, Son, & Wallington	2,940 0 0
Nowell & Robson	2,889 0 0
Mears	2,850 0 0
Bull	2,811 0 0
Neave & Son	2,797 0 0
Floyd	2,790 0 0
Serff & Spittle	2,765 0 0
Baxter	2,665 0 0
Aldrey	2,548 0 0
Thomson & Co.	2,540 0 0
Willson & Co.	2,400 10 0
Pauling	2,350 0 0
Ford	2,333 13 0
Ward	2,138 0 0
Hailis & Taylor	1,989 0 0!

The Late Mr. M. Bulmer, Architect.—The will (dated October 27, 1854) of Mr. Martin Bulmer, formerly of Maidstone, but late of Church-street, Strood, Kent, architect and surveyor, who died on October 30th last, was proved on the 19th ult. by Mrs. Emily Bulmer, the sole executrix, to whom he gives, devises, and bequeaths all his real and personal estate. The personal estate is sworn under 30,000*l.*

BOYLE'S SYSTEM OF VENTILATING GAS-BURNERS.

Sir,—In reply to H. Faraday not entirely concurring in my statement as to the heating power of single pipes, and for the purpose of drawing off the products of combustion arising from gas, I beg to say that I alluded principally to their application in billiard-rooms, where a large quantity of piping would be used and fixed at a level little higher than the head. The heat created by those pipes was found to be considerable, and the more felt owing to the close proximity of the players to the source of the heat. Messrs. Robt. Boyle & Son's arrangement of non-conducting tubes would be specially applicable in a case of this kind, and would, in my opinion, effectually overcome the evil, which experience has proved to be a very positive one, and most difficult to deal with.

As to the application of single tubes to ordinary gas-lights, independently of the great heating power caused by the hot compressed air raising them to a very high temperature, and making them act exactly the same as a patent heating apparatus which radiates its heat throughout the entire apartment,—not confining it to the air immediately surrounding, as suggested in italics by your correspondent, which, if such were really the case, would render useless all the ingenious and elaborate contrivances in existence for heating on this principle. There was always the annoyance of the condensed moisture which is found in them. Messrs. Boyle's plan to a very considerable extent prevents this condensation, through the main pipe being protected from the colder air, and radiation prevented. The principal cause, however, of this method of drawing off the heat from the gas having generally resulted in failure, has been the imperfect provision made for creating an upward current in the ventilating shaft and tubes, the cold external air as often as not forcing the heated air back into the apartment, and by the pressure from above preventing the hot air in the tubes getting away, with a result, so far as increased heat is concerned, apparent to all.

This important point Messrs. Boyle & Sons have evidently well considered, it being one which, if not satisfactorily settled, would have rendered their double non-conducting tubes comparatively valueless. As I mentioned before, with their plan they are assured of a continuous upward current, and no down-draught, by the use of their air-pipe ventilator, which is fixed on the roof in connexion with the ventilating shaft, and effectually draws off the heat as fast as it is generated, and prevents it from accumulating in the tubes.

Your correspondent says that the chief objection to Messrs. Boyle's tubes, which otherwise he considers "*undoubtedly good*," is their unsightly proportions, compared, I suppose, with the single tube. Now, as I gave no proportions in my letter, I fail to see how he arrived at that conclusion, unless he had a previous knowledge of Messrs. Boyle's plan. If so, then he must be aware that the double tubes are so constructed and applied by them as to occupy *less* space than the single tubes usually employed, thus lessening the objectionable appearance,—if anything can be objectionable which tends so much to our comfort and welfare. W. G.

DOUBLE-ACTION SOIL-PIPE VENTILATORS.

Sir,—In your issue of the 3rd inst., p. 24, Messrs. R. Boyle & Son give a description of a new ventilator, patented by them, as suitable for double-action pipes, and say that "I have used these pipes very extensively." This is quite correct, as far as it refers to the pipes, but as your issue of the 10th inst. contains a further notice, with diagrams, it may lead to some misconception on the part of your readers, which I wish to avoid.

I have published my system of ventilating soil-pipe and house-drains, and it is so simple that any one having the slightest knowledge of the subject will at once perceive that it is quite different to that set forth by Messrs. Boyle & Son.

The new ventilator has not yet been used by me, and is not likely to be so, as in my opinion the inlet and outlet are much too close to each other: my endeavour, for obvious reasons, being to keep them as much apart as possible. The difference in height, also, is not sufficiently great to secure the natural syphon action when the wind is stationary. ROBT. P. BEATTIE.

*** We have received several other letters for and against this ventilator, but cannot enter upon the discussion. The public have the diagrams before them, and must judge for themselves.

STAINES TOWN HALL COMPETITION.

Sir,—Judging from the letters which have appeared in the last two numbers of the *Builder*, I think the profession have now got a case which it would be as well to test, and, if successful, we may hope that competitions in the future will be conducted on a better basis. Let the profession make a stand, and by pulling together in this case show the local boards and corporate bodies that they can defend their interests when members of their body are so flagrantly treated. I was not a competitor for the building in question, but if you, sir, will consent to receive subscriptions I will willingly send a guinea; and if all the competitors,—about forty I understand,—do the same, and appoint a committee to have the case submitted to some eminent counsel, should it be found a good case for trial I will subscribe further. Possibly the Institute and Association, when counsel's opinion is obtained, might assist also.

UNITY IS STRENGTH.

Ship-building on the Tyne.—The class of vessels which have hitherto been built on the Tyne consists of screw cargo steamers; but it is hoped that a new era commenced on Monday last, the 12th inst., when a paddle passenger steamer was launched from the yard of Messrs. T. & W. Smith, North Shields. This vessel has been built to the order of the Great Eastern Railway Company for their Continental passenger service between Harwich, Rotterdam, and Antwerp. Her passenger accommodation is of a superior description.

SARAGOSSA CATHEDRAL.

Sir,—I have been much interested in the beautiful engraving you gave of the Saragossa Stalls. There is a most superb reredos of the fifteenth and sixteenth century work in the same cathedral. C.

*** We intend to give a view of it in a very early number.

VARIORUM.

Mr. E. J. Gilman's volume of poems, entitled "Guzman the Good," from the name of the tragedy with which it commences, has attained the honour of a second edition (Chapman & Hall), thus justifying the good opinions expressed when it was first published. The story of "Guzman is highly dramatic, and is treated effectively. The volume includes a second play, "The Secretary," which might easily be fitted for the stage.——"The Garden Oracle and Horticultural Year Book," for the new year, by Shirley Hibberd, is full of useful information on the subject to which it relates.——The current number of the *Timber Trades Journal* contains a valuable review of the timber trade during the past year.

Miscellanea.

Scavenging by Fire.—An apparatus for destroying the refuse collected by the Corporation scavengers by burning is stated to have been in successful operation in Leeds for several months. The refuse is tumbled into the furnaces—pots and pans, crockery and earthenware, stones and brickbats, all going in—being either burned up bodily or so purified as to be no longer offensive. In the month of December, we are informed, 991 loads of refuse, or 1,000 tons 2 cwt., were consumed in twenty-four working days of twenty-four working hours each, or at the rate of 40 1-3 loads daily. The work of destruction begins on Monday morning, and the place is continuously in operation, day and night, till three o'clock on Saturday afternoon, when work ceases for the week. No coal is used. The draught of air is so strong, and the heat so fierce, that the furnaces roar and blaze away, the material poured in at the top being sufficient to keep the "destructor" going. There are six furnaces or "cells." These are regularly raked up by the men in charge, who pull out the masses of refuse. Amidst the burnt stuff are iron pots and pans, which are picked out, placed in heap, and sold at 25s. a ton. Attached to the works are two mills driven by a 14-horse steam-engine, in which mortar is made, the slag which collects in the furnaces being ground into a fine sand, and utilised for this purpose.

The Case of Mr. Goffin.—The governors of the United Westminster (Endowed) Schools having written to the Secretary of the Science and Art Department, requesting that body "to give Mr. Goffin the opportunity of vindicating his character by a trial in a court of law," Mr. Norman MacLeod, the Secretary of the Department, has forwarded to the governors a minute of the Lords of the Committee of Council on Education in reference to the subject, the eighth paragraph of which is as follows:—

"My Lords remark that the minutes of evidence taken by a committee of the Governors, on which that body first grounded their opinion of Mr. Goffin's innocence, show the perfunctory nature of their inquiry, and do not bear out the statements in the Governors' letter of July, 1879, said to be founded thereon. If, however, with a view to justify their conduct in retaining at the head of an important public institution a man who has been found by a committee of the House of Commons to be guilty of the grave charges that are brought against him, the Governors of the United Westminster Schools desire to have the proceedings of that tribunal, to which they themselves appealed, revised, it is for them now to take such steps as they may consider advisable."

The "Counterblast Cowl."—If Messrs. Treggon & Co.'s cowl acts as well as the model of it sent to us, it will be found useful. Upon blowing with the mouth sharply upon the top of the cowl, in any direction, some wool placed at the bottom rises, thus showing that were the wool replaced by smoke or foul air the same result would take place. When the breath is forced against the extreme top, vertically, the same result takes place, thus demonstrating that down-draught is unlikely. The tube is carried up full size to the top to admit the passage of a sweep's broom without impediment.

Society of Arts.—The section of the Society of Arts, formed in 1874, for the discussion of subjects connected with practical chemistry and its application to the arts and manufactures, has been this year enlarged in its scope that it may include application of physics as well as of chemistry. At the six meetings of the present year the following papers will be read:—January 22, "The Teaching of Technical Physics," by John Perry, late Professor of Engineering, Japan; February 12, "Gas Furnaces and Kilns for Burning Pottery," by Herbert Guthrie, C.E.; March 11, "The Noxious Gases Bill," by E. K. Muspratt, F.C.S.; April 8, "On Recent Improvements in Benzine Colours," by F. J. Friswell, F.C.S.; April 22, "On some Recent Advances in the Science of Photography," by Captain Abney, R.E., F.R.S.; May 13, "On some Physical Applications of Light," by Prof. W. G. Adams, F.R.S. The meetings are on Thursday evenings, at 8 o'clock, and the days have been selected so that they do not clash with those on which the meetings of the Chemical Society are held.

West London School of Art.—The formal opening of this new school of art will take place on Monday, the 26th inst., at eight p.m., when Mr. H. S. Marks, R.A., will present the prizes, and deliver an address to the students. The new school is the largest of the ten Metropolitan District Schools of Art, and one of the six largest in the kingdom. The new buildings in Great Tichfield-street comprise a large Sculpture Gallery, 75 ft. by 23 ft., on the top floor, lighted from above, with large galleries and rooms for male and female elementary students, with large life-class room on the first and ground floors, and rooms for modelling, designing, and architectural classes, housekeeper, &c., on the basement, the whole well lighted and ventilated. The works have been carried out by Messrs. Watson, Bros., builders, from the designs and under the superintendence of Mr. Robert W. Edis, F.S.A., architect, of Fitzroy-square.

Amsterdam Art Exhibition.—The Society of Dutch Artists, "Arti et Amicitiæ," at Amsterdam, has entrusted to a committee the care of forming a loan exhibition of gold and silver objects of artistic value executed before the commencement of the present century. This exhibition will be held in the saloons of the society, Rokin, Amsterdam, in April, May, and June next. Mr. Wilfred Cripps, of Farleigh House, Sandgate, Kent, writes to say that he has been asked to act as correspondent in England of the exhibition. The Commission will undertake all expenses of transport and insurance, insuring each article separately for the sum named by the proprietor, if required to do so; and the Dutch Government have exempted any articles consigned to the Commission from abroad for exhibition from liability to import or export duties.

Melbourne International Exhibition.—The Commissioners for this Exhibition, which will open at Melbourne on the 1st of October, have decided that the Exhibition building shall contain 650,000 square feet of space, of which 400,000 have been reserved for Europe and America. The demands for space from British exhibitors amount to 180,000 square feet. The British Government has appointed a Royal Commission, of which His Royal Highness the Prince of Wales is executive president. All information on the subject of the Exhibition may be obtained on application to the secretary, at the offices of the Agent-General for Victoria, 8, Victoria-chambers, Victoria-street, S.W.

Hart's Patent Tie Brick.—A correspondent who wishes to know something about this brick, had better call at 34, Piccadilly and inquire for himself. Each brick is made at the bottom with eight stud-like projections, the top of each brick having corresponding indentations to receive them. It is claimed *inter alia* that the use of them effects a saving in time of skilled labour, and that greater strength and durability can be obtained than with the use of ordinary bricks. They excited attention at the Croydon Sanitary Exhibition.

The Belgian Premium.—We hear that the jury has decided that no one of the architectural treatises presented in competition for the prize of 25,000 francs offered by the King of the Belgians is worthy of receiving the prize. Two of the jury were in favour of awarding it to MM. Van Bemmel and Coulon, for their study of the Church of Villers.

Mental Health in Education.—The last paper read at the recent Conference of Teachers was by Dr. B. W. Richardson, on "Mental Health in Education." Dr. Richardson explained that he proposed to discuss the study of those methods of education by which the mind may be maintained in a healthy and well-balanced condition. Hitherto the science of health had been studied too exclusively in relation to physical considerations, though, as a matter of fact, a great amount of physical disease was due wholly to mental causes. At least one-fourth of those who died in their prime owed their disease, in the first instance, to mental influences. The importance of his subject was, therefore, obvious. With regard to the mental health of children, he would remark, *in limine*, that he had never seen a perfectly healthy child. It was most desirable that the training received by children should be given in such a manner as to lead to the better development of the body as well as of the mind. In order that mental education should be perfectly conducive to health, the distinction between the analytical and the synthetical orders of mind should be always remembered and noted by the teachers. Otherwise not only would much time be wasted in the endeavour to teach children subjects radically unsuited to their mental powers, but much injury would also be inflicted on them. Teachers ought, if possible, to discover the natural bent of a child's mind, and, when found, to recognise and respect it. A similar process should be applied to the varying bodily stamina of children; for it was hopeless for parents to expect great results as long as children of different mental and bodily constitutions were all taught in precisely the same manner. Again, the strain imposed on the mental faculties was often excessive. Education ought to be continued methodically through one's whole life, and not concentrated in the few years that precede the attainment of the legal majority. He believed that the results of competition as it now existed were, in many cases, disastrous, and very seldom valuable.

Election of a District Surveyor.—At the meeting of the Metropolitan Board of Works on the 16th inst. the first business was the election of a district surveyor for the district of East Hackney (South) and North Bow, in the room of the late Mr. C. A. Gould. There were thirty candidates for the appointment, viz.:—Messrs. H. H. Bridgman, C. W. Brooks, E. Carritt, A. Conder, D. R. Dale, J. S. Edmeston, G. Elkington, jun., J. M. Ferguson, W. Grellier, F. Hammond, E. R. Hewitt, P. Hunter, J. W. James, L. Karslake, W. A. Large, W. H. Lees, E. Marsland, G. McDonell, F. C. Notley, A. Payne, J. S. Quilter, W. Smallpiece, A. B. Stenning, T. Stone, E. Street, W. Tasker, A. T. Taylor, F. Todd, T. Williams, and J. Young. In the result Mr. A. Payne was elected, Mr. Williams standing second in the order of voting, Mr. Hammond third, Mr. Lees fourth, Mr. Street fifth, and Mr. Elkington sixth.

The Vesuvius Railway.—The railway up Vesuvius is now reported completed. It is over half-a-mile (900 mètres) long, and leads right up to the edge of the crater. The line has been laid down with great care upon a solid permanent way, and is said to be perfectly protected against lava streams. The trains are drawn up by means of two wire-ropes pulled by an engine stationed at the foot of the cone of Vesuvius. The wheels are so constructed that there is no fear of the train running off the metals; a powerful automatic brake will stop the train almost instantly in the case of the rupture of a rope. The greatest difficulty to overcome was to provide water. This has been obtained by the construction of two large tanks, one near the station, the other not far from the observatory. Is there to be a *restaurant* in the crater?

Letts's Popular Atlas.—We fully endorse Messrs. Lett's claim to have produced a work entitling them justly to use the above title, for they have given us in their first part our money's worth most liberally. The maps are clear, the points of interest selected are judicious, and, as far as we have tested, the geographical accuracy is equally satisfactory. This, at 7d. a part, is certainly a boon.

Conversazioni in the City.—It is understood that the Right Hon. the Lord Mayor (Sir F. Truscott) intends to distinguish his mayoralty by holding three *conversazioni*, early in the season, devoted to Art, Science, and Literature. The first, artistic, will probably take place in April.

Liability of Arbitrators and Umpires.—A case of considerable importance to surveyors and land agents is expected to be tried at the Leeds Assizes shortly. An arbitration lately took place in which Mr. Fenwick of Leeds (who is well known in the North of England as an arbitrator of some experience), acted as umpire. According to the *Land Agents Record* the two arbitrators who had appointed him failed to agree, and Mr. Fenwick as umpire made his award. One of the parties to the reference went into liquidation, and the other refused to pay the charges of the two arbitrators, but was allowed to take up the award on payment of the umpire's costs. One of the arbitrators being unable to obtain payment for his services has sued the umpire for the amount of his costs (between 300*l.* and 400*l.* we believe), on the ground that he had a lien upon the award, and the umpire had no right to give it up without first obtaining payment of the arbitrator's costs.

Fall of Houses at Finsbury Park.—On Thursday morning, about half-past eight o'clock, a pile of buildings, recently erected upon a triangular piece of ground opposite the Finsbury-park Railway Station, showed signs of giving way. The cement coping at the top began to crack, and then nearly the whole of the front facing Seven Sisters-road came down with a crash. One of the fallen houses had been occupied for some time as a hosier's. It is believed no lives have been lost, the workmen being away at breakfast at the time. The collapse of the buildings is attributed to the excavations for a deep sewer recently constructed, the soil being clay.

Proposed New Harbour in Ireland.—An influential meeting was held in the town of Wicklow for the purpose of promoting a scheme for the erection of a harbour of refuge at the port. It was explained that the anchorage is good, there being no sand or alluvial deposit as at other parts of the coast, and there is no harbour between Dublin and Waterford in which ships can take shelter. It is proposed to construct a breakwater at a cost of 50,000*l.*, one-half of which the Government are to be asked to contribute, while the county will guarantee the rest. The meeting adopted the proposal, and steps were taken for bringing it before the Government.

White Shellac Varnish.—Dissolve one part pearlash in about eight parts water; add one part shellac, and heat the whole to the boiling point. When the lac is dissolved, cool the solution, and impregnate it with chlorine until the lac has all settled. This precipitate is white, but the colour is due to the washing and starching. When it is dissolved in alcohol it forms a varnish which is as transparent as any copal varnish.—*Fortsch. der Zeit.*

Tamworth Cottage Hospital, erected in the Leys, at Tamworth, was formally opened on Wednesday. The hospital has been built by Mr. C. Starkey, of Tamworth, from designs supplied by Colonel Drake, R.E. It is a one-storied building, capable of accommodating about a dozen patients; attached is a provident dispensary. The entire cost of erection and furnishing, which amounts to over 1,000*l.*, has been borne by the Vicar of Tamworth (the Rev. W. Macgregor).

The Liverpool Water Scheme.—At the meeting of the Liverpool Town Council on Wednesday the scheme for obtaining a supply of water from Lake Vyrnwy was submitted for the necessary second confirmation under the Act of Parliament. Some opposition was offered on the ground of expense, but ultimately the scheme was again approved by 39 votes to 8.

The Geneva Theatre.—Plan, section, and other illustrations of this new theatre in Geneva, of which we gave a view in our last issue, will be found in the number for January 3rd of the *Eisenbahn* (Bd. xii., No. 1), published by Orell Füssli & Co., Zurich.

Royal Polytechnic Institution.—The directors, active in catering for public amusement, announce for Monday next, the 26th inst., a Scottish Concert, commemorative of the birthday of Robert Burns.

The Parkes Museum.—The Drapers' Company have granted a donation of fifty guineas to the Parkes Museum of Hygiene.

Appraisers.—The number of appraisers and house agents licensed in the last year was 4,876, at 2*l.* each, and the revenue was 9,752*l.*

The Late Mr. Thomas Landseer, A.R.A.—This eminent engraver died on Tuesday last, at his residence in St. John's-wood, at the age of eighty-six. Mr. Landseer was the eldest of the three brothers who have taken such high places in English art. Sir Edwin, the youngest, died first, and Charles died only a few months ago. Mr. Landseer excelled especially in mezzotint engravings, and some of his brother Edwin's works rendered in his style have never been surpassed for beauty and fidelity of execution. Mr. Landseer was enabled to continue the exercise of his art until the last two or three months, one of his last works being from a study of a lion made by Sir Edwin for the Nelson column, and this has been finished with singular skill. Mr. Landseer had been for many years quite deaf, but his genial temper and his kindly courteous manner endeared him to many friends.

The Bell Telephone Exchange.—According to the *Electrician*, considerably over two hundred subscribers now enjoy the facilities of the Coleman-street central exchange. Local exchanges have also been opened in Leadenhall-street, and Palace Chambers, Westminster. The provincial towns, Manchester, Liverpool, Birmingham, Sheffield, Bristol, Leeds, Edinburgh, Glasgow, and Dundee, have also been provided with exchanges.

An International Exhibition of the Brick, Earthenware, Lime, Cement, and Gypsum Industries is to be held at Berlin from the 29th of June to the 10th of August, 1880. The President of the Exhibition Committee is Herr Paul Loeff, Privat-Baumeister, Berlin, S.W.

TENDERS

For east wing, Clifton College, Clifton. Mr. Charles F. Hansom, architect. Quantities supplied:—

Stephens & Bastow	£8,979 0 0
Young	5,575 0 0
Crick	5,559 0 0
Cowlin & Sons	5,249 0 0
Church	5,199 0 0
Hatherley	4,987 0 0
Davies	4,950 0 0
Baker & Son	4,900 0 0
Beaven	4,850 0 0
Davy, R. & J.	4,845 0 0
Crocker	4,825 0 0
Beaven, A. J.	4,690 0 0
Howell & Sons	4,619 12 0
Forse & Ashley	4,599 10 0
Pugsley	4,599 0 0
Veals	4,489 0 0
Lewis & Edbrooke	4,474 0 0
Wilkins & Sons (accepted)	4,472 0 0

For model dwellings at Stoke Newington, for the Metropolitan Association for Improving the Dwellings of the Industrious Classes. Messrs. Davis & Emanuel, architects. Quantities supplied by Mr. Frederick Downing:—

Ashley Bros.	£19,405 0 0
Conder	18,871 0 0
Shaw	17,300 0 0
Williams & Son	16,735 0 0
Peto Bros.	16,415 0 0
Lawrance	15,980 0 0
Brass	15,748 0 0
Grover (accepted)	15,734 0 0

For four cottages at Penny Stratford, Bucks. Mr. F. Gotto, architect:—

Whiting	£450 0 0
Sears	398 0 0
Adams	369 0 0
Gates	335 0 0
Staniford	325 0 0
Warren (accepted)	310 0 0

For re-building the King William IV. tavern and two houses adjoining, at the corner of Caledonian-street and Grosvenor-road, Pimlico, for Mr. Barrett. Mr. George Legg, architect. Quantities not supplied:—

Bowden	£6,560 0 0
Smith	4,550 0 0
Piokersgill Bros.	4,445 0 0
Stimpson & Co.	4,370 0 0
Hooper	4,275 0 0
Reddin	4,155 0 0
Stevenson	3,970 0 0
Toms (accepted)	3,930 0 0

For additions to Holy Trinity Church, Richmond, Surrey. Mr. Luck, architect. Quantities supplied by Messrs. Northcroft, Son, & Neighbour:—

Manley	£1,649 0 0
Higgs & Hill	1,489 0 0
Clemence	1,425 0 0
Sims	1,399 0 0
Dove Bros.	1,295 0 0
Seal	1,135 0 0
Collins	1,126 0 0

For alterations and additions to No. 49, Bryanston-street, Portman-street, for Mr. J. Henry. Mr. H. E. Snelgrove, architect:—

Henson Bros.	£1,188 12 10
Gibbins	1,112 0 0
Childerhouse & Co.	1,093 0 0

For alterations and additions to 2, Swan-walk, Chelsea, for Mr. W. Miller. Messrs. A. & C. Harston, architects:—

Harrison & Wood	£573 0 0
Croft	568 6 0
Thorn (accepted)	550 0 0

For the erection of new hospital at Newark-upon-Trent, Notts. Mr. W. B. Saunders, architect :—

Brailsford & Brown	£6,092 0 0
Cosham	5,787 0 0
Bickmore	5,762 0 0
Lowe	5,667 0 0
Bell & Son	5,538 15 0
Hodson & Facon	5,534 0 0
Binns Bros.	5,458 10 0
Bradley & Barker	5,302 0 0
Dennett & Co.	5,152 0 0
Young	5,152 0 0
M'Culloch	4,963 12 0
Vickers	4,908 0 0
Tutin	4,898 7 2
Mackenzie & Bains	4,667 0 0
Smith & Lunn	4,567 0 0
Clipsham	4,412 0 0
Duke	4,162 0 0

In each case 167*l.* was added to the tender for ironwork, concrete, and laundry.

For additions and alterations to the Dun Cow, Old Kent-road, for Mr. Brettingham. Mr. John Cox Dear, architect :—

Allard	£486 0 0
Warren	486 0 0
Temple & Forster	485 0 0
Beale	460 0 0
Rudd (accepted)	443 0 0

For the erection of warehouse at the junction of Farringdon-road and Clerkenwell-road, London, for Mr. J. G. Murdoch. Mr. Henry E. Wood, architect. Quantities by the architect :—

Downs	£7,387 0 0
Howell & Son	7,299 0 0
Nettle	7,200 0 0
Brown & Robinson	6,990 0 0
Coles & Sons	6,830 0 0

For private hotel, Jewin-street. Messrs. Ford & Hesketh, architects :—

	Building.	Fittings.
Ashby	£4,810	£1,579
Bangs	4,898	1,314
Mark	4,700	1,348
Bywater	4,666	1,189
Crabb	4,439	1,368
Brass	4,485	1,268
Boyce	4,493	1,2 0
Braid & Co.	4,294	1,375
Nightingale	4,318	1,139
Scrivener & Co.	4,315	1,132
Conder	4,298	1,128
Lawrence (accepted)	4,180	1,216

For new shop and studio, King's road, Reading, for Mr. W. S. Wyles. Mr. Geo. W. Webb, Reading, architect :—

Simonds	£793 0 0
Lewis	755 10 0
Weaver	728 0 0
Woodroffe	715 10 0
Margetts	688 10 0
Wernham	674 11 11
Jenkins	665 0 0

For new roads, brick and pipe sewers, for the British Land Company (Limited), on their Crouch End Estate, Hornsey. Mr. Henry B. Michell, surveyor :—

Peill	£2,620 0 0
Wilson	2,500 0 0
Keeble	2,467 0 0
Thompson & Covington	2,420 0 0
Crockett	2,470 0 0
Acock	2,400 0 0
Jackson	2,399 0 0
Harris	2,398 0 0
Killingback	2,396 0 0
Pizzey	2,388 0 0
Dunmore	2,375 0 0
McKenzie & Co.	2,185 0 0
Bloomfield (accepted)	2,184 0 0

For new road and surface water drains, for the British Land Company (Limited), on their Estate at Strood, Kent. Mr. Henry B. Michell, surveyor :—

Thompson & Covington	£893 0 0
McKenzie & Co.	8 3 0 0
Callund & Son	644 0 0
Harris	640 0 0
West	600 0 0
Pizzey	598 0 0
Acock	595 0 0
Gates	569 0 0
Peill	539 0 0
Jackson (accepted)	444 0 0

For additions to Soldiers' Daughters Home, Hampstead. Messrs. James & J. S. Edmeston, architects. Quantities by C. N. McJ. North :—

Dove Bros.	£3,995 0 0
Nye	3,780 0 0
Cowland Bros.	3,679 0 0
Shepherd	3,350 0 0
Green & King	3,320 0 0
Kirk & Randal	3,320 0 0
Lucas & Son (accepted)	3,280 0 0

For the erection of warehouse and stores, Love-lane, Bankside, Southwark, for Messrs. Geo. Mayor & Co. Mr. Henry E. Wood, architect. Quantities by the architect :—

Stone	£370 0 0
Tilbury	275 0 0

For new roads, for Messrs. Blizard & Humphreys, on their Estate, at Upton, Essex :—

Wilson (accepted)	£739 10 0

In list of tenders for Coach and Horses, Holborn, Messrs. Langridge's tender should be 499*l.* instead of 409*l.*

TO CORRESPONDENTS.

E B. L.—W.W.—J. B.—C.—T. & Co.—C. C H.—W. C. & Co.—L. G.—J. & W. R.—C. H—F. D.—W. M. P. B—E. T.—R. G. & Co.—Dr. G.—F. T—A H—T. P—S. O. & Co—R. Y.—R. R.—A. E.—R. W. F.—J. C. D—H. M—F. & H.—J. P.—H. E. W.—S. & H. (should have sent list and amounts).—J. P. (next week).—W. C. B. (next week).—E. & G. (under our mark).—M. B. A. (cancelled, having appeared elsewhere).—J. F. (ditto).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO SUBSCRIBERS.

THE INDEX and TITLE-PAGE for the Volume of last year (1879) is given as a Supplement with this week's Number.

A COLOURED TITLE-PAGE may be had, gratis, on personal application at the Office.

CLOTH-CASES for binding the Numbers are now ready, price 2s. 6d. each; also

READING-CASES (Cloth), with Strings, to hold a Month's Numbers, price 2s. each.

THE THIRTY-SEVENTH VOLUME of "The Builder" (bound) for the year 1879 will be ready on the 27th inst., price One Guinea.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS TRADE, AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under ..... 4s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

Terms for series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.

FOUR Lines (about THIRTY words) or under ..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

REPLIES TO ADVERTISEMENTS,

Addressed Box ——, Office of "The Builder,"

Cannot be forwarded, but must in all cases be *called for*, and the Office Receipt produced.

THE CHARGE FOR A BOX IS AS UNDER :—

For "Situations Wanted" Advertisements ..... 3d. per Week.
For all other Advertisements ..... 6d. per Week

PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, King-street, Covent-garden, W.C. to

DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied *direct* from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, prepaid. Remittances payable as above.

Bath Stone of Best Quality.
RANDELL, SAUNDERS, & CO. (Limited), Quarrymen and Stone Merchants.
List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to
Bath Stone Office, Corsham, Wilts. [Advt.]

Doulting Freestone and Ham Hill Stone of best quality. Prices, delivered at any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset. Agent: E. Crickmay, 4, Agar-street, London, W.C.—[Advt.]

Bath Stone.
Facilities for selection and quality unequalled, having 350,000 feet cube in Stock of all known descriptions.
PICTOR & SONS,
Box, Wilts.—[Advt.]

Asphalte.
Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office :
No. 90, Cannon-street, E.C. [Advt.]

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Advt.]

Whitland Abbey Green Slates. — The peculiar green tint of these stout, durable Slates recommends them for Churches, Mansions, and Public Buildings. Present Orders booked at Reduced Prices.—Apply to Mr. J. MUSCOTT, Clynderwen, R.S.O., South Wales.—[Advt.]

J. Sessions & Sons, Docks, Gloucester, Manufacturers of ENAMELLED SLATE and MARBLE CHIMNEY-PIECES, URINALS, &c. WELSH ROOFING SLATES direct from Quarries to any Station in the Kingdom. Manufacturers of Joinery & Mouldings. [Advt.]

Damp Houses and Buildings, New and Old, DRIED, completely and permanently, in a few days, by LIGNY'S PATENT APPARATUS. By appointment to the French Government. Particulars of A. DREYFUS & CO. 39, Monkwell-st. E.C. Damp basements cured.—[Advt.]

J. L. BACON & CO.
MANUFACTURERS OF
IMPROVED HOT-WATER APPARATUS,
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.
OFFICES AND SHOW-ROOMS :—
No. 34, UPPER GLOUCESTER PLACE, DORSET SQUARE, LONDON, N.W.
Illustrated Pamphlet on "Heating" post free for Twelve Stamps.

Roofing Felts.—F. Braby & Co.
INODOROUS, SARKING, SHEATHING, AND HAIR FELTS, KEPT ALWAYS IN STOCK. MANUFACTURERS OF PERFORATED ZINC, PERFORATED COPPER, AND PERFORATED IRON, IN VARIOUS DESIGNS AND GAUGES.

Wrought Iron Tanks.—F. Braby & Co.
PAINTED AND GALVANISED, OF IMPROVED MANUFACTURE.

Corrugated Iron.—F. Braby & Co.
GALVANISED AND BLACK IN ALL GAUGES KEPT IN STOCK. ZINC WORK OF ALL KINDS.

FITZROY WORKS, 356 to 369, EUSTON ROAD, LONDON.
Hatton Garden, Liverpool; Great Clyde Street, Glasgow; and at Cyprus.